

## Adaptation

许炯心, 1995, 我国东部季风区不同自然带年径流特征及人类活动影响的比较研究, 地理研究, 14(3):33-42

本文通过对我国东部季风区不同自然带年径流量与气候因子关系的分析, 揭示径流深随纬度和经度变化的规律。通过对不同自然带中人类活动对河川径流的干预强度的比较, 得出应在半干旱地区加强水资源保护, 推行节水措施。

关键词: 径流地带性  
人类活动对径流影响 比较研究  
中国

**Xu Jiongxin.** 1995. A comparative study on the zonal differences in river runoff and human influence in China. *Geographical Research* 14(3):33-42.

The relationship between zonal differences in river runoff and climatic index in monsoon-influenced China is analyzed. The analysis examines the regulation of runoff according to changes in latitude and longitude. Through the comparison of the influence and intensity of human activities on river runoff of different zones, it is concluded that water resources should be protected and that water-saving measures should be carried out in semi-arid regions.

Keywords: zonality of river runoff, influence of human activities on runoff, comparative study, China



唐守顺等, 1995, 皖南山核桃生产气候资源的开发利用, 气象, 21(1):48-51

本文分析了影响山核桃生长的气候条件, 提出了趋利避害, 争取高产的建议, 为合理利用气候资源提供了参考依据。

关键词: 山核桃 气候资源  
开发利用

**Tang Shoushun et al.** 1995. Utilization of climatic resources for production of walnuts in Southern Anhui Province. *Meteorological Monthly* 21(1):48-51.

On the basis of analyses of climatic factors that affect growth of walnuts, the paper provides suggestions for the reasonable utilization of the climatic resources.

Keywords: walnut, climatic resources, utilization

郭建平等, 1995, 东北地区农业气候生产潜力及其开发利用对策, 气象, 21(2):3-9

本文根据东北地区100个气象台站1971—1990年气象和产量等资料研究了东北地区主要粮食作物的气候适应性和气候生产潜力。结果表明, 东北地区中部平原区的气候生产潜力较高, 50°N以北地区和东部长白山天池附近最低。文章还用线性规划对东北地区部分县的主要农作物结构提出调整意见。

关键词: 东北地区 生产潜力  
结构调整 对策

Guo Jianping et al. 1995. Agroclimatic potentiality and its countermeasures for development and application in Northeastern China. Meteorological Monthly 21(2):3-9.

The climatic adaptability and potential productivity of main grain crops are studied using documents of meteorology and crop yield from 100 meteorological stations in Northeastern China between 1971 and 1990. The climatic productive potentiality is higher for the middle plain of Northeastern China and is lowest to the north of 50° N and in regions near Tianchi Lake of Changbaishan Mountain. Lastly, structural adjustments of main crops in some counties of Northeastern China are pointed out using linear programming.

Keywords: Northeastern China, productive potentiality, structural adjustment, countermeasure



胡斯团, 黄大文, 张儒林, 1995, 南海北部热带气旋移向突变的气候特征, 气象, 21(8):23-25

本文根据1970—1990年进入预报研究区(15—25°N, 125°E以西)的热带气旋移向变化情况, 分析移向发生突变的变化与地理分布等方面的气候特征。通过对热带气旋移向的突变与副热带高压活动、海岸地形关系的研究得到一些有意义的结果, 为寻找预报判据提供了气候特征的依据。

关键词: 热带气旋 移向突变  
气候特征

Hu Situan, Huang Dawen, and Zhang Rulin. 1995. The climatic characteristic of sudden change in track of tropical cyclone over the north part of the South Sea. Meteorological Monthly 21(8):23-25.

Based on data (1970 to 1990) of tropical cyclones with sudden changes in direction that entered the area of concern (15 to 25° N, Western of 125° E), climatic features, such as seasonal and geographical distributions, are shown. The relationships between the sudden change in track and the activity of a subtropical high and terrain factors are discussed. The results are helpful in forecasting sudden change in track of tropical cyclones.

Keywords: tropical cyclone, sudden change in track, climatic feature

徐国昌, 1995, 绿洲气候资源和绿洲建设, 干旱区资源与环境, 9(4):138-145

本文根据绿洲气候资源的两重性及其变化趋势, 讨论了绿洲气候生态的巨大潜力与生态环境的脆弱性, 并提出绿洲开发对策。

关键词: 绿洲 气候资源 绿洲建设

Xu Guochang. 1995. Climatic resources and oasis construction. *Journal of Arid Land Resources and Environment* 9(4):138-145.

The dual nature of the climatic resources of oases and their tendency to change are analyzed in the paper. The author discusses the great climate production, the latent capacity, and the fragile ecological environment of oases. According to the features of the oasis climatic resources, some strategies for oasis development are suggested.

Keywords: oasis, climatic resources, oasis construction



## Ancient Climate Change

吴胜光, 韩辉友, 俞锦标, 1995, 贵州晴隆碧痕营晚第四系及古环境研究, 地理研究, 14(2):49-55

本文对贵州晴隆碧痕营湖相发育的晚第四系的古环境作出了分析, 距今3万—2万年前的温暖期, 洼地附近的山地上生长着以落叶阔叶为主的针阔混交林, 小有波动, 当时的年均温较现在低1—6°C; 在气温较今约低2—6°C距今3—2.6万年前后, 是含高比例水青冈的针阔混交林, 在距今2.3万年前后, 气温较今低1—3°C, 附近山地生长常绿阔叶、落叶混交林; 在距今2.6—2.3万年和距今2.3万年后一段时期, 针阔混交林发育; 在向冰期转化过程中, 气候干冷, 蕨类植物蔓生; 湖相层之后是混杂泥砾堆积。

关键词: 碧痕营 晚第四系 古环境 孢粉

Wu Shengguang, Han Huiyou, and Yu Jinbiao. 1995. Analysis of the Late Quaternary sediments and paleoenvironment in Bihenyang, Qinglong County, Guizhou Province. *Geographical Research* 14(2):49-55.

The paper presents an analysis of the ancient environment of lacustrine deposit formed in the Late Quaternary in Bihenyang, Qinglong County, southwest Guizhou Province. From 30 ka BP to 20 ka BP, the annual mean temperature was 1-6°C lower than that of today, mixed deciduous broadleaf and coniferous forests were growing on the hill land, with little variation between deciduous broadleaf forest and mixed coniferous forests. From 30 ka BP to 26 ka BP, the annual mean temperature was 2 to 6°C lower than that of today and there were mixed deciduous broadleaf and coniferous trees with a high proportion of *Fagus*. Around 23 ka BP, the temperature was 1-3°C lower than that of today, and there were mixed deciduous and evergreen trees. From 26 ka BP to 23 ka BP, and after 23 ka BP, the mixed broadleaf and coniferous forests were growing there. After that period, the climate turned dry and cold and pteridophyte grew widely. In the full glacial period, lacustrine deposition stopped and was replaced by the chaotic sediments of mud and gravel.

Keywords: Bihenyang, Late Quaternary system, Paleoenvironment, pollen and spore

董光荣等, 1995, 150Ka以来中国北方沙漠、沙地演化和气候变化, 中国科学(B辑), 25(12): 1302-1312

本文根据气候带、沙丘活动程度和地层沉积相组合特点, 将中国北方沙漠和沙地分为东部、西部、中部和西北部4个沙区, 从时间和空间两方面讨论了150Ka以来中国北方沙漠、沙地演化和气候变化。

关键词: 沙漠 沙地演化 气候变化

**Dong Guangrong et al.** 1995. The desert and sandy land evolution and climatic changes in the north of China since 150 ka BP. *Science in China (Series B)* 25(12):1302-1312.

On the basis of the characteristics of the climate belt, level of dune moving, and deposit of stratum, the authors divide the desert and sandy land of the north of China into four regions. These are eastern part, western part, middle part, and northwestern part. The authors also discuss desert evolution, sandy land evolution, and climatic changes for 150 ka BP in the North of China in time and space.

Keywords: desert, sandy land evolution, climatic changes



章新平, 姚檀栋, 1995, 青藏高原降水中 $\delta^{18}\text{O}$ 与温度和降水量的关系, 地理科学, 15(1):1-7

本文分析了青藏高原降水中的 $\delta^{18}\text{O}$ 含量的变化特征, 以及 $\delta^{18}\text{O}$ 与局地气象要素的关系。结果表明,  $\delta^{18}\text{O}$ 与气温存在正相关关系,  $\delta^{18}\text{O}$ 随气温和降水量的变化而变化。

关键词: 青藏高原  $\delta^{18}\text{O}$  温度 降水量

**Zhang Xinping and Yao Tandong.** 1995. The relationship between  $\delta^{18}\text{O}$  in precipitation and temperature and precipitation in Qinghai-Xizang Plateau. *Scientia Geographica Sinica* 15(1):1-7.

The authors analyzed the variation feature of  $\delta^{18}\text{O}$  in the Qinghai-Xizang Plateau and the relationship between  $\delta^{18}\text{O}$  and regional weather factors. The results show that there are positive relations between  $\delta^{18}\text{O}$  and temperature. The amounts of  $\delta^{18}\text{O}$  are changeable with temperature and precipitation.

Keywords: Qinghai-Xizang Plateau,  $\delta^{18}\text{O}$ , temperature, precipitation



白光润, 1995, 从泥炭分布的演化过程分析中国东部和日本一万年来干湿变迁, 地理科学, 15(1):30-38

本文认为水热条件决定了泥炭的空间分布。作者通过分析现代泥炭分布和相应的泥炭形成时期的气候条件的关系, 确立了泥炭分布与水热关系模式:  $Z=5.7K+12-T$ 。由此得出中国东部和日本一万年来干湿变迁特点。

关键词: 泥炭形成水热系统指数  
泥炭分布历史演化 干湿变迁

**Bai Guangrun.** 1995. Humid and arid fluctuation during the last 10,000 years reconstructed from the peat formation in eastern China and Japan. *Scientia Geographica Sinica* 15(1):30-38.

Based on an analysis of the relationship between present peat distribution and the climatic condition of peat formation, a model was set up to explain the relationship between peat distribution and humid and thermal conditions:  $Z = 5.7K + 12 - T$ . Humid and arid fluctuations during the last 10,000 years are reconstructed according to the research.

Keywords: hydrothermal system index of peat formation, historical evolution of peat distribution, humid and arid fluctuation



李森等, 1995, 浑善达克沙地全新世沉积特征与环境演变, 中国沙漠, 15(4): 323-331

本文根据浑善达克沙地全新世沉积中的粒度、化学元素、孢粉及披毛犀化石等环境变化证据, 将全新世气候划分为8个旋回或三个演变阶段: 升温波动期(10—7.1KaBP)、温暖期(7.1—3.2KaBP)和温干冷干频繁波动期(3.2KaBP至今)。

关键词: 浑善达克沙地 全新世沙质古土壤 气候旋回 环境演变

**Li Sen et al.** Holocene deposits and environmental evolution of Otingdag sandy land. *Journal of Desert Research* 15(4):323-331.

According to data of grain-size variation, chemical element composition, pollen-spore assemblage, and rhinoceros fossils that were included in Holocene deposits of Otingdag sandy land, the climate of the Holocene is divided into eight cycles and three evolutionary stages, namely, a temperature-rising fluctuation period from 10 to 7.1 ka BP, and a warm period from 7.1 to 3.2 ka BP, and warm-dry and cool-dry fluctuation period from 3.2 ka BP to the present.

Keywords: Otingdag sandy land, Holocene, sandy paleosol, climatic cycle, environmental evolution

孙东怀等, 1995, 全新世气候适宜期黄土高原及黄土/沙漠过渡区年降水量的初步恢复, 中国沙漠, 15(4):339-344

本文通过黄土高原不同地区的全新世黄土—古土壤剖面磁化率测量数据以及磁化率与降水量的转换函数, 初步恢复了全新世气候适宜期黄土高原及黄土/沙漠过渡区年降水量的分布状况。

关键词: 全新世 古气候要素  
磁化率 黄土

Sun Donghuai et al. 1995. Preliminary reconstruction of annual rainfall in Loess Plateau and Loess-Desert transitional regions in suitable climatic period of Holocene. Journal of Desert Research 15(4):339-344.

On the basis of the susceptibility-rainfall conversion function and data of the determination of the magnetic susceptibilities of typical Holocene loess-paleosol profiles in different areas of the Loess Plateau, the suitable climatic period of Holocene and the rainfall distribution of the Loess Plateau and Loess-Desert transitional areas were preliminarily reconstructed.

Keywords: Holocene, Paleoclimatic element, susceptibility, Loess



高全洲等, 1995, 晚更新世以来巴丹吉林南缘地区沙漠演化, 中国沙漠, 15(4):345-352

受东亚季风降水尾间摆动的影响, 巴丹吉林沙漠南缘地区在晚更新世以来的演化中表现出微弱的波动性质。全球冰期气候波动主宰着本区沙漠的演化方向, 青藏高原的隆起使该区变得更加干旱。

关键词: 巴丹吉林沙漠 演化  
晚更新世 风成砂

Gao Quanzhou et al. 1995. Evolution of southern fringe of Badain Jaran Desert since Late Pleistocene. Journal of Desert Research 15(4):345-352.

Affected by the shifting East Asia Monsoon, the Badain Jaran Desert has undergone a series of changes characterized by fluctuation. The tendency of evolution of the desert is governed by its glacier climate. The uplift of Qinghai-Xizang Plateau reduces humidity and makes the temperature lower in the area.

Keywords: Badain Jaran Desert, evolution, Late Pleistocene, eolian sand

崔之久等, 1995, 昆仑山垭口区新石器时代人类活动遗迹的发现及其环境意义, 科学通报, 40(7):624-627

本文依据昆仑山垭口区新石器时代人类活动遗迹的特点, 研究了古代气候和环境变迁, 得出气候变迁影响着人类活动。由此, 作者认为, 高山区冷期可能长而稳定, 由冷变暖缓慢, 暖期较短, 转入冷期较快。

关键词: 昆仑山垭口 古代人类 灰烬层

**Cui Zhijiu et al.** 1995. The find of traces of human activities during New Stone Age in Kunlun Pass and its environmental significance. Chinese Science Bulletin 40(7):624-627.

Based on the characteristics of traces of human activities of the New Stone Age in Kunlun Pass, the authors studied ancient climate and environmental changes and believes that human activities were affected by environmental changes. On that basis the author concluded that the alpine cold period was long and steady and turned warm slowly; the warm period was short and turned more quickly to the cold period.

Keywords: Kunlun Pass, ancient human being, ashes layer



施雅风, 郑本兴等, 1995, 青藏高原中东部最大冰期时代高度与气候环境探讨, 冰川冻土, 17(2):97-112

本文应用多种资料推断出最大冰期出现时间相当与深海氧同位素18-16阶段 (0.72-0.52MaBP), 当时青藏高原低于现代1000m左右, 在唐古拉山、阿尼玛卿山、果洛山与稻城海马子4个山区, 冰川面积达4000Km<sup>2</sup>, 为现代冰川面积的18倍, 平衡线高度为3450-4250m, 夏季平均温度为2.3-3.4℃, 年降水量为1260-1960mm, 是现代平衡线上降水量的1.8-3.2倍。

关键词: 最大冰期 青藏高原抬升 气候

**Shi Yafeng and Zheng Benxing et al.** 1995. Research on altitude and climatic environment in the middle and eastern part of Tibetan Plateau during Quaternary Maximum Glaciation. Journal of Glaciology and Geocryology 17(2):97-112.

Based on various data, the authors analyzed the altitude and climatic environment during Quaternary maximum glaciation. The results indicate that the time of the appearance of the Quaternary maximum glaciation corresponds to the deep sea core oxygen isotopic stages 18-16 (0.72 to 0.52 MaBP). At that time the height of the Plateau was approximately 1000 m lower than that at present; the total glacierized area of Tanggular, A'nyemaquen, Golgrand, and Daocheng Haizi was 4000 km<sup>2</sup>; 18 times larger than that at present, the equilibrium line altitude varied from 3450 to 4250 m, the average air temperature in summer varied from 2.3 to 3.4° C, and the annual precipitation varied from 1260 to 1960 mm, 1.8 to 3.2 times more than that at present at the equilibrium line altitude.

Keywords: Quaternary maximum glaciation, climate, uplift of Tibetan Plateau

刘光锈等, 1995, 孢粉记录揭示的2万年以来若而盖地区的气候变化, 冰川冻土, 17(2):132-137

根据若而盖黑河牧场DC剖面的孢粉记录, 作者认为本次冰期晚阶段若而盖高原的气候表现为不稳定, 冷暖变化频繁, 与全球变化基本一致。本文还分析了该地区20000年来的冷暖变化情况。

关键词: 孢粉记录 若而盖  
气候变化

**Liu Guangxiu et al.** 1995. The vegetation and climatic changes in Zoige during the last 20,000 years determined by pollen records. *Journal of Glaciology and Geocryology* 17(2):132-137.

According to the pollen records from Zoige, the climate in this area fluctuated frequently between warm and cold, coinciding with global changes during the last 20,000 years. The authors analyze the roles of the climatic change from warm to cold in detail.

Keywords: pollen records, Zoige, climate change



徐道明, 沈永平, 1995, 青藏高原的泛冰盖遗迹与冰期, 冰川冻土, 17(3): 213-229

本文利用多年野外考察资料研究青藏高原的古冰川遗迹, 认为青藏高原曾经历过泛冰盖时期, 将古冰川遗迹划分为晚更新世早晚(100-30KaB.P.和20-

10KaB.P.)两个时期。另外, 还讨论了冰期划分、冰盖形成条件等问题。

关键词: 冰盖遗迹 泛冰盖  
末次冰期 青藏高原

**Xu Daoming and Shen Yongping.** 1995. On ancient ice-sheet and ice age in the Tibetan Plateau. *Journal of Glaciology and Geocryology* 17(3):213-229.

Data suggest that the Tibetan Plateau was inundated by ice. The ancient ice sheet can be divided into two ages: early stadium (100 to 30 ka BP) and late stadium (20 to 10 ka BP) of the Last Glaciation. In addition, problems concerning the dividing method of the glacier and the formation condition of the ice-sheet are discussed.

Keywords: ice sheets landforms, coalescing ice-sheet, Last Glaciation, Tibetan Plateau

曾昭美, 章名立, 季劲军, 1995,  
近百年来全球不同冷、暖期温度分  
布及环流特征, 地理学报,  
50(2):147-159

本文利用全球格点气温、海面温度、海平面气压等资料, 分析了不同冷暖期之间温度距平场的分布特点、区域和季节差异以及海、陆变化的不同步性等, 对本世纪以来四个不同冷暖时期(1906—1915, 1936—1945, 1966—1975, 1979—1988年)的温度场和地面气温场作出总结。在温度的纬向谐波分析中发现冬季暖期, 中高纬度超长波活动盛行。

关键词: 海面温度 海面气压  
谐波分析 温度距平

Zeng Zhaomei, Zhang Mingli, and Ji Jinjun. 1995. The patterns of temperature and sea level pressure in various cold and warm periods within recent 100 years. *Acta Geographica Sinica* 50(2):147-159.

The patterns of global temperature and sea level pressure during four special periods (1906-1915, 1936-1945, 1966-1975, and 1979-1988) are studied in the article. The results of harmonic analysis on zone temperature field show that the ultra-long wave was active during the warm winter period.

Keywords: sea-surface temperature, sea level pressure, harmonic analysis, temperature anomaly



秦大河, 任贾文, 效存德, 1995,  
揭示气候变化的南极冰盖研究新进展, 地理学报, 50(2):178-184

本文研究了南极冰盖与海平面及全球变化的联系, 认为南极冰盖是记录全球变化信息的良好载体, 具有信息量大、时间序列长、保真性能强、分辨率高等独特优点。南极冰盖与全球变化研究这一领域将会以高起点、多学科互相交叉、渗透为特色, 成为未来南极研究的热点。  
关键词: 南极冰盖 全球变化  
环境气候记录 海平面变化  
大气环流

Qin Dahe, Ren Jiawen, and Xiao Cunde. 1995. Progress in the research on Antarctic Ice Sheet in relation to global change. *Acta Geographica Sinica* 50(2):178-184.

The relationship between the Antarctic ice sheet and global change, including sea-level changes, was analyzed. The global change information derived from the ice sheet is unique because of its wide range of direct and proxy measures, long time-scale, and high resolution and fidelity. More widespread international and multidiscipline cooperation will be emphasized in future research programs.

Keywords: Antarctic ice sheets, global change, environmental climatic record, sea level change, atmospheric circulation

周霞, 1995,

天山北坡中段气候垂直分异研究,  
干旱区地理18(2):52-60

本文根据天山北坡中段气候要素垂直分布差异、热量和水分指标以及植被和土壤的垂直分布差异, 将天山北坡中段划分出四个垂直气候带: (1) 山前冲积扇、冲积平原温带; (2) 中低山寒温带; (3) 亚高山—高山寒带; (4) 高山冰雪带。

关键词: 天山北坡中段

气候要素垂直分布 垂直气候带

**Zhou Xia.** 1995. Vertical climatic difference in the middle part of the northern slope of the Tianshan Mountains. *Arid Land Geography* 18(2):52-60.

On the basis of the outstanding differences in the vertical distribution of climatic elements, the indexes of heat and moisture, and vertical distribution of vegetation and soil, the middle part of northern slope of the Tianshan Mountains can be divided into four vertical climatic zones: (1) Front mountain-alluvial plain temperate zone; (2) low-middle mountain cold-temperate zone; (3) sub-high and high mountain frigid zone; and (4) high mountain snow-ice zone.

Keywords: middle part of northern slope of Tianshan Mountains, vertical distribution of climatic elements, vertical climatic zone



周子康, 刘为伦, 1995, 浙江台风  
(热带风暴) 灾害的若干特点, 地  
理研究, 14(2):56-63

本文根据1949—1992年的气象、水文和灾害资料分析了浙江台风灾害的五个特点: 1、台风日期与天文大潮期相遇机率高, 使得沿海地区潮灾严重; 2、台风大风是浙江沿海城市台风灾害危害的主因之一, 且其危害具有连锁反应倾向; 3、直接和继发性灾害叠加是台风对浙江农业危害的特点; 4、台风灾害区的地理分布具有山脉走向性; 5、台风重灾年呈阶段性年际分布。

关键词: 台风 灾害

**Zhou Zikang and Liu Weilun.** 1995. Some characteristics of the typhoon disaster in Zhejiang Province. *Geographical Research* 14(2):56-63.

From an analysis of the data of atmosphere, hydrology, and disaster during 1949-1992, the characteristics of the typhoon disaster in Zhejiang Province are as follows: (1) Typhoon often have a high coincidence with the astronomical spring tide and bring heavy tide damage to the coastal areas of Zhejiang Province. (2) Typhoon is one of the main causes of disasters of coastal city in Zhejiang. (3) The conjunction of direct damage and successive damage is the characteristic of the damages to agriculture caused by typhoons. (4) The distribution of typhoon disaster regions has the characteristics of paralleling to the mountain ranges. (5) The distribution of heavy disaster years caused by typhoons in Zhejiang has a periodic character.

Keywords: typhoon, disaster

葛全胜, 王维强, 1995, 人口压力, 气候变化与太平天国运动, 地理研究, 14(4):32-41

本文通过史料分析, 论证了人地矛盾的激化, 以及在此基础上气候异常造成的全国农业大范围连年歉收, 对中国历史上著名的太平天国运动(1851—1864)的爆发, 起着特别激发作用。

关键词: 人口压力 气候变化  
太平天国运动

Ge Quansheng and Wang Weiqiang. 1995. Population pressure, climate change, and the Taiping Rebellion. Geographical Research 14(4):32-41.

Based on historical data, the authors considered that the conflict between the quick growth of population and the shortage of cultivated land, and climate change and its negative impact on agriculture played a special role in triggering the outbreak of the Taiping Rebellion (1851-1864).

Keywords: population pressure, climate change, Taiping Rebellion



于希贤, 1995, 对《徐霞客游记》中戊寅年(1638)滇中超长雨期的初步研究, 地理研究, 14(4):85-90

本文对《徐霞客游记》记载的公元1638年发生的现代气象记录滇中高原从未有的超长雨期进行研究, 为认识全球环境变化提供了依据。

关键词: 徐霞客 超长雨期

Yu Xixian. 1995. A study on the extra-long autumn rain in the central part of Yunnan in 1638 based on Xu Xike's Travels. Geographical Research 14(4):85-90.

According to the records of sunny and rainy days in Xu Xike's Travels, there was continuous heavy rain in 1638. No such extra-long autumn rains are recorded in the present meteorological records of the central part of Yunnan. This study provides materials for research of global changes.

Keywords: Xu Xike, extra-long heavy rain

陈育峰, 张强, 1995, 气候周期与天体活动周期的对应性及其区域特征的初步探讨, 地理研究, 14(4):91-96

本文初步探讨了各区域气候周期与天体活动周期期间的对应性及区域特征。气候变化周期与天体活动周期之间有着密切的成因联系和对应关系。天体活动对地球气候系统的影响以及区域气候对天体活动的响应都表现出较强的区域差异。

关键词: 气候周期 天体活动 区域差异

Chen Yufeng and Zhang Qiang. 1995. A preliminary discussion on periodical correspondence between climate and celestial activities and its regional characteristics. Geographical Research 14(4):91-96.

The authors discuss the regional characteristics and correspondence between periodical linkage and celestial activities. There is a close periodical correspondence between climate and celestial activities. There are also strong regional characteristics in both the impacts of celestial activities on Earth's climatic system and in the responses of regional climate to celestial activities.

Keywords: climate periodicity, celestial activity, regional characteristics



孙安健, 刘小宁, 1995, 华南春季低温冷害气候特征研究, 气象, 21(3):25-29

本文根据华南地区48个台站1951—1990年2—3月气象资料, 讨论了华南春季低温冷害的气候特征, 认为其特征如下: 1、春季低温冷害愈向南愈向2月份集中, 且随纬度和海拔的升高而加重; 2、冷害过程的初日和终日的年际波动较大; 3、华南春季低温冷害过程多为湿冷型, 混合型次之, 干冷型最少; 4、春季低温冷害过程频率的峰值呈现周期振动。

关键词: 华南 春季 低温冷害

Sun Anjian and Liu Xiaoning. 1995. The climate characteristic of spring cool damage in South China. Meteorological Monthly 21(3):25-29.

According to the analysis of meteorological data in February and March from 1951 to 1990 at the 48 stations in South China, the authors discuss climate features of spring cool damage in detail. The results show that: (1) Spring low-temperature disaster is concentrated in February toward the south of China and increases with increasing latitude and height above sea level. (2) The interannual fluctuations of beginning and ending date of spring cool damage vary greatly. (3) The dominating pattern is moist-cool for spring cool damage and is a mixed pattern of moist-cool as well as dry-cool pattern in turn. (4) The peak values of pentad frequency of spring cool damage show an oscillation.

Keywords: South China, spring, low temperature with cool damage



**陈峪**, 1995, 1994年我国天气气候特点, 气象, 21(4):22-24

1994年, 我国南北大部降水丰富, 中部地区降水偏少。全国有南北两条明显多雨带, 大部分地区气温偏高。总的看来, 1994年气候年景为一般偏差。

关键词: 天气气候 气候年景

**Chen Yu**. 1995. The features of weather/climate in China in 1994. Meteorological Monthly 21(4):22-24.

There was plentiful precipitation in both south and north China in 1994, whereas the middle part was dry. There were two rainy belts in north and south China. The temperature of most of the country was higher than normal. In general, the climate of the year was a little worse than normal condition.

Keywords: weather/climate, climate of the year



**何敏**, 1995, 1994年北半球环流特征及其影响, 气象, 21(4):25-28

本文分析了1994年北半球主要环流特征, 其特征表现为: 1、500hPa偏强西伸, 盛夏异常偏北; 2、欧亚地区盛行纬向环流, 北半球极涡向极地收缩, 强度偏弱; 3、盛夏时东亚中纬度地区维持稳定的高压脊, 西风带锋区位置偏北; 4、夏季南亚高压强度偏强, 位置偏北, 东伸明显; 5、热带海洋异常, 形成厄尔尼诺事件。北半球大气环流和热带海洋的异常对我国天气气候产生了明显影响。

关键词: 环流特征 厄尔尼诺 天气气候

**He Min**. 1995. General circulation over the Northern Hemisphere in 1994 and its impact. Meteorological Monthly 21(4):25-28.

The analysis of general circulation features over the Northern Hemisphere in 1994 shows that: (1) The subtropical high over the west Pacific extends west, is stronger than normal, and moves northward abnormally in midsummer. (2) It is dominated by Eurasian zonal circulation, and the Polar vortex in the Northern Hemisphere is weaker in strength than normal and shrank to the area of the pole. (3) In the mid-latitude of East Asia, high-pressure systems keep stable in summer, and the westerly frontal zone moves northward. (4) The South Asia high is stronger in summer, farther to the northward than normal and extents to the east. (5) An El Niño event is forming over the tropical Pacific. The abnormality of both the atmospheric circulation and the tropical ocean exerts a significant impact on the weather and climate in China.

Keywords: circulation, El Niño, weather and climate

庄丽莉, 1995, 1994年世界气候概况, 气象, 21(4):29-32

本文分析了1994年世界气候概况。总的来说, 这一年世界气候普遍偏暖, 有些地区的平均气温比常年偏高0.5-1.0°C, 北半球中纬度地区夏季受高温热浪冲击。年内全球旱、涝频繁, 在澳大利亚和印度尼西亚等地区发生的干旱自1991年来已持续了4年, 这与1991年来发生的长厄尔尼诺/南方涛动事件紧密相关。  
关键词: 世界气候 热浪 厄尔尼诺/南方涛动

Zhuang Lili. 1995. The world climate in 1994. Meteorological Monthly 21(4):29-32.

The world climate was generally warmer than normal in 1994. Large sections of the middle latitudes in the Northern Hemisphere were hit by heat waves during this summer. Many regions experienced climate events such as severe drought or serious flood, frequently in some areas of the world. In Australia and Indonesia the persistent droughts were associated with the long El Niño Southern Oscillation (ENSO) events that have occurred several times since 1991.

Keywords: the world climate, heat wave, ENSO



赵振国, 陈国珍, 1995, 对流层月平均环流的持续性, 气象, 21(5):3-8

本文分析了北半球对流层环流持续性的时空变化规律及其影响持续性的各种因素。结果表明, 环流的持续性, 高层比低层好, 低纬度比中高纬度好, 东半球比西半球好, 冬夏季比春秋好。持续性还存在着准2年、4年和6.5年的周期变化, 这些准周期分别与QBO及厄尔尼诺现象和太阳活动的周期振荡、火山爆发等相联系。  
关键词: 环流 持续性 时空变化 影响因素

Zhao Zhenguo and Chen Guozhen. 1995. The persistence of monthly mean atmospheric circulation in the troposphere in the Northern Hemisphere. Meteorological Monthly 21(5):3-8.

The temporal and spatial characteristics of the persistence of monthly mean atmospheric circulation in the troposphere over the Northern Hemisphere are analyzed. The results show that the persistence is higher in the upper-troposphere than in the low-troposphere, in low-latitude than in high-latitude, in the Eastern Hemisphere rather than in the Western Hemisphere, and in winter and summer than in spring and autumn. It found persistent links with solar activities, Qiao-Biennial Oscillation (QBO), El Niño, and volcanic activities. Quasi-oscillations of 2 years, 4 years, and 6.5 years of the persistence are closely connected with the above-mentioned factors.

Keywords: atmospheric circulation, persistence, time and space feature, influencing factors

杨义文, 王慕真, 1995, 我国5月降水的气候特点和长期变化, 气象, 21(5):31-35

本文通过中央气象台长期科160站月降水资料分析了中国5月份降水的基本气候特点和长期变化。强调了5月份降水预报业务的重要性, 明确了5月份南北方降水长期变化的阶段性及其反位相振荡现象对5月份降水长期预报业务具有重要意义。

关键词: 5月降水 气候特点  
长期变化

Yang Yiwen and Wang Muzhen. 1995. Climate feature and long-range changes of rainfall of May in China. Meteorological Monthly 21(5):31-35.

Based on the analysis of monthly rainfall data of 160 stations in China, the climate feature and the long-scale changes of rainfall in May are analyzed in the paper. The importance of rainfall forecasting of May is emphasized. The rainfall stage feature of South China-North China and their opposite phase are significant for long range-rainfall forecasting in May.

Keywords: rainfall of May, climate feature, long-scale changes



盛永宽, 1995, 短期气候(月、季、年)逐月降水预测系统研究, 气象, 21(6):3-8

本文介绍了短期气候逐月降水预测系统。论述了把气候模式与人工神经网络结合起来开发气候预测支持系统的必要性和可能性, 并详细讨论了系统结构。然后, 提出有关预测结果分析和进一步完善该系统的看法。

关键词: 气候模式 神经网络  
降水预测系统

Sheng Yongkuan. 1995. Study on short-term climatic monthly rainfall prediction system. Meteorological Monthly 21(6):3-8.

A short-term climate prediction system for monthly rainfall is introduced in this paper. The author mainly deals with the necessity and possibility of combining a climate model and artificial neural network to develop a Climate Prediction Support System. The structure of the systems also is discussed in detail. Then some views on the analysis of prediction results and further improvements are proposed.

Keywords: climate model, neural network, rainfall prediction system

王谦, 1995

黄淮海平原极限干旱历史概率特征研究, 气象, 21(6):9-12

本文根据相依水分序列、独立水分序列极限干旱历时确切概率密度函数及其特征, 分析了黄淮海平原5个代表点30年逐旬降水序列和逐年时段降水序列极限干旱历时概率分布特征。

关键词: 相依序列 独立序列  
极限干旱历时 黄淮海平原  
概率分布

张家诚, 张先恭, 魏凤英, 1995,  
中国及邻近地区冬到夏的季节变化,  
气象, 21(7):3-8

本文分析了北半球季节变化的敏感区—南亚地区在季节转变过程中的热力学与环流变化特征。为了更好的反映季节变化特征, 文章设计计算了南支西风指数, 并将副高面积指数分南北两区统计。结果表明, 这个指数组对梅雨与华北雨季有天气气候学意义。同时, 作者还找到了这个指数组对我国一些地区旱涝的前期指标。

关键词: 季节变化 环流指数  
旱涝预报

Wang Qian. 1995. The study on the probability feature of critical drought duration in Huang-Huai-Hai Plain. Meteorological Monthly 21(6):9-12.

On the basis of the probability distribution function (PDF) of both dependent and independent series, the probability features of critical droughts, duration of precipitation for ten-day periods, and year-to-year seasonal periods were analyzed at five stations on the Huang-Huai-Hai Plain.

Keywords: dependent series, independent series, critical drought duration, probability features, Huang-Huai-Hai Plain



Zhang Jiacheng, Zhang Xiangong, and Wei Fengying. 1995. Seasonal change from winter to summer for circulation and rainfall in China and contiguous regions. Meteorological Monthly 21(7):3-8.

South Asia is a region in the Northern Hemisphere that is sensitive to seasonal change. Annual variations of thermal and atmospheric circulation peculiarities of South Asia are analyzed in this paper. For better representation of seasonal change, an index of the southern branch of westerly is proposed, and a new regional index of subtropical highs is analyzed for the northern and southern regions. The results show that there is a strong link between these indexes and the MeiYu and the rainy season of North China. A series of earlier indexes of serious drought and flood are also used with reference to long-range weather forecasting.

Keywords: seasonal variation, index of atmospheric circulation, drought/flood forecasting

孙寿全, 魏文秀, 1995, 热带气旋与河北特大暴雨, 气象, 21(7):34-37

本文利用1965—1994年的资料分析了河北特大暴雨与太平洋热带气旋的关系, 将热带气旋影响的河北特大暴雨分为三种类型, 并对其中快速发展型进行了进一步的分析和探讨。

关键词: 特大暴雨 热带气旋  
西风槽

Sun Shouquan and Wei Wenxiu. 1995. Tropical cyclones and heavy rainfall in Hebei Province. Meteorological Monthly 21(7):34-37.

Based on analysis of data from 1965 to 1994, the authors discuss the relationship between the heavy rainfall in Hebei Province and the tropical cyclones over the west Pacific. Three types of the tropical cyclones impacting on the heavy rainfall in Hebei Province are given, and their rapid development types are analyzed.

Keywords: heavy rainfall, tropical cyclone, westerly trough



李月洪, 1995, 我国干旱半干旱区降水场及其与北极海冰的关系, 气象, 21(9):11-15

用复经验正交函数(CEOF)方法将我国干旱半干旱区45个代表站1950—1992年间的月降水距平场划分为三种主要的分布类型并分析它们的分布特征。文章揭示了北极海冰状况与干旱半干旱区降水的密切关系, 分析海冰与极涡、西太平洋副热带高压等大气环流的关系以了解其可能的天气学影响过程。

关键词: 降水 干旱半干旱区  
北极海冰

Li Yuehong. 1995. The characteristics of precipitation in the dry and semidry region of China and their connection with Arctic sea ice. Meteorological Monthly. 21(9):11-15.

The temporal and spatial distribution of precipitation in the dry and semidry region of China are divided into three types by use of the complex empirical orthogonal functions (CEOF) analysis of data for 45 stations from 1950 to 1992. The relationship between the precipitation patterns and Arctic Sea ice is also analyzed. Finally, the possible influences of physical processes are discussed.

Keywords: precipitation, dry and semidry region, Arctic Sea Ice

张尚印, 刘小宁, 孙安健, 1995, 秋季华南低温冷害的气候特征, 气象, 21(9):21-24

本文根据1951—1990年9—10月华南48个气象台站资料分析了低温冷害天气气候特点。结果表明, 低温冷害频率自北往南递减, 从沿海向内陆增加。总数量由北向南递减, 南北差别较大。灾害的持续时间和强度也有相应规律。强低温冷害年有9年, 主要集中在1966—1980年。

关键词: 低温冷害 气候特征 频数

Zhang Shangyin, Liu Xiaoning, and Sun Anjian. 1995. The climatic characteristic of chilling damage in South China during autumn. Meteorological Monthly 21(9):21-24.

Based on analysis of data of 48 stations, from September to October 1951-1990, the paper analyzes the climatic character of chilling damage in autumn in South China. The results show that the mean frequency of chilling damage decreased from north to south and increased from coast to inland in South China. Continuous time of the chilling damage process shortens rapidly from the north to the south. There were 9 years of strong chilling damage, most of which happened during 1966-1980.

Keywords: chilling damage, climatic characters, frequency



李栋梁, 姚辉, 1995, 中国西北夏季降水量与500hPa纬偏场的特征分析, 气象, 21(11):22-26

利用西北五省129个测站30年6—8月的降水资料, 以EOF方法分解, 从不同方面分析其特征向量和载荷量的空间分布特征, 将中国西北夏季降水量场分成5种空间分布型。利用相应的时间系数与同期欧亚500hPa纬偏场进行遥相关及典型场的对比分析, 给出中国西北夏季降水类型所对应的环流场特征。

关键词: 自然正交函数分解  
西北夏季降水 欧亚纬偏场 遥相关

Li Dongliang and Yao Hui. 1995. The characteristic analysis of summer precipitation and 500 hPa latitudinal deviation field. Meteorological Monthly 21(11):22-26.

With data from 129 representative stations of five provinces of Northwestern China from June to August for 30 years, the total precipitation is analyzed by the empirical orthogonal functions (EOF) method. The summer precipitation fields are classified into five patterns of spatial distribution. Comparison between teleconnection and typical field of the time coefficient and simultaneous Eurasian 500 hPa latitudinal deviation field indicates a circulation field that corresponds to the summer precipitation patterns in Northwest China.

Keywords: natural orthogonal function resolution, summer precipitation in northwest China, Eurasian latitudinal deviation field, teleconnection

许晨海等, 1995, 南大洋海冰月际变化的一些特征, 气象, 21(11):38-41

本文根据1973—1986年的资料对海冰面积指数的月际变化特征进行了分析。50°S以南与60—69.75°S间海域海冰面积月际变化特征相似, 海冰月际变化在某些地区有纬向传播趋势。一般说来, 9月份海冰最多, 2月份海冰最少, 但有些地区可与上述情况相差1个月。

关键词: 南大洋 海冰 月际变化

**Xu Chenhai et al.** 1995. Some features of the inter-monthly sea ice variation in the southern oceans. *Meteorological Monthly* 21(11):38-41.

Based on the area index data of sea ice from 1973 to 1986, the intermonthly sea ice variation in the southern oceans is analyzed. The results show that the inter-monthly variation pattern of sea ice area in the latitude belt north of 50° S is similar to that of 60-69.75° S. The variation of sea ice show a tendency of eastward (or westward) propagation in certain areas. Generally, the quantity of sea ice reaches the maximum in September and minimum in February. But at certain longitudes, the months extreme values occurred could move up or delay for one month.

Keywords: the southern ocean, sea ice, inter-monthly variation



陈兴芳, 1995, 1994年西太平洋副高异常变化及其成因分析, 气象, 21(12):3-7

本文分析了1994年副高异常的气候特征及其成因。1994年副高季节性北跳早, 盛夏位置稳定偏北。副高的这些特点与气候背景和海气相互作用有关。作者还讨论了副高异常对海温距平场的影响。

关键词: 副热带高压 气候特征 异常变化 成因分析

**Chen Xingfang.** 1995. The anomalous change of subtropical high and the cause of its formation in the West Pacific. *Meteorological Monthly* 21(12):3-7.

The anomalous climatic characteristic of the subtropical high and the cause of its formation in the West Pacific in 1994 are analyzed. The seasonal northward jump of the subtropical high is earlier than normal with strong intensity, and its position is persistently farther north in midsummer. Such characteristics are associated with the climatic backgrounds and the ocean-atmosphere interaction. In addition, the sea surface temperature (SST) anomaly field that corresponds to the subtropical high anomaly is discussed.

Keywords: Subtropical high, climatic characteristic, anomalous change, analysis of formation cause

施雅风, 张祥松, 1995, 气候变化对西北干旱区地表水资源的影响和未来趋势, 中国科学 (B辑), 25(9):968-977

中国西北部干旱区地表水资源主要孕育于6大山系, 分为积雪、冰川、河流、湖泊4类。现代气候正处于暖干化, 预计2030年左右, 西北山区升温1°C, 降水与蒸发都有相当量的增加, 但地表水资源的变化总趋势是萎缩的。

关键词: 气候变化 水资源 冰川  
积雪 湖泊

**Shi Yafeng and Zhang Xiangsong.** 1995. The effect on water resource by climate change and its trend. Science in China (Series B) 25(9):968-977.

Groundwater resources are mainly formed in six main mountains in Northwestern China and include four types: snow, glacier, river, and lakes. The current climate is turning to warm/dry, the temperature in the northwestern mountain area will raise 1°C by the 2030s. The precipitation and vapor are both increasing, but the general trend of groundwater resources is decreasing.

Keywords: climate change, water resource, glacier, snow, lakes



丁永建, 1995, 近40年来全球冰川波动对气候变化的反应, 中国科学 (B辑), 25(10):1093-1098

近40年来全球冰川波动资料表明, 冰川波动具有区域性特点, 冰川波动与气候变化具有对应关系。全球范围内, 大冰川 (长度>5公里) 波动滞后气候变化约8年, 小冰川 (长度≤5公里) 则滞后约2年左右。

关键词: 冰川波动 气候变化  
冰川物质平衡

**Ding Yongjian.** 1995. Reaction of climate change of global glacier fluctuation for recent 40 years. Science in China (Series B) 25(10):1093-1098.

The regional characteristics of glacier fluctuation are analyzed with the research on data of global glacier fluctuation for the last 40 years. There is a corresponding relationship between glacier fluctuation and climate change. The glacier fluctuation is 8 years behind climatic changes for long glaciers (>5km), and 2 years behind for short glaciers (≤5km).

Keywords: glacier fluctuation, climate change, material balance of glacier



姚檀栋等, 1995, 古里雅冰芯中小冰期以来的气候变化, 中国科学 (B 辑), 25(10):1110-1114

本文论述了小冰期以来古里雅冰芯所反映的气候变化特征。400多年来, 17世纪和19世纪是寒冷少雨期, 18世纪和20世纪是温暖多雨期。温度和降水的对应关系与季风对本区的影响具有内在联系。

关键词: 古里雅 冰芯 气候变化

**Yao Tandong et al.** 1995. The climatic change from the Little Ice Age represented by ice core of Guliya. Science in China (Series B) 25(10):1110-1114.

The climatic change from the Little Ice Age (LIA) that can be derived from the ice core of the Guliya Ice Cap is discussed in this paper. According to the 400 year record, the climate was cold and dry in the 17th and 19th century, and warm and humid in the 18th century and 20th century. The relationship between temperature and precipitation shows an inter-association with monsoons.

Keywords: Guliya, ice core, climatic change



郑景云, 张丕远, 1995, 近500年冷暖变化对我国旱涝分区的影响, 地理科学, 15(2):101-108

本文利用我国东部及南部85个站点的旱涝资料对近500多年我国的旱涝状况进行了分区, 并对我国冷暖时期旱涝分区变化状况进行分析。我国东部地区存在两条明显的旱涝分界线: 不同的冷暖时期, 旱涝分界线的位置有所不同, 暖期北移, 冷期南移。

关键词: 冷暖变化 旱涝分区 影响

**Zheng Jingyun and Zhang Peiyuan.** 1995. The impact of temperature change for the last 500 years on the regional division of drought/flood in China. Scientia Geographica Sinica 15(2):101-108.

Based on drought/flood data of 85 stations in the east and south of China, the authors study the demarcations of drought/flood for the last 500 years. The regional divisions of drought/flood in China during cold and warm periods are discussed. There are two main demarcations of drought and flood in the east of China. In the cold or warm period, the demarcations of flood and drought in the east of China have marked differences. The demarcations and the regions of drought/flood shifted south in the cold period and moved north during the warm period.

Keywords: changes of warm or cold, regional division of drought/flood, impact

丁永建, 刘凤景, 1995, 近三十年来青海湖流域气候变化对水量平衡的影响及其趋势预测, 地理科学, 15(2):128-135

本文通过对青海湖流域气候和水文要素变化的分析, 研究了近三十年来气候变化对青海湖水量平衡的影响。结果表明, 水量平衡与降水和气温密切相关, 近三十年来青海湖的水位下降与降水量减少有关, 气温影响着地面和水面的蒸发。现代气候正在向湿、暖转变, 青海湖的水量平衡将会保持现状, 甚至会稍有回升。文章还论述了地下冰融对水量平衡的影响。

关键词: 气候变化 降水 气温  
流域水量平衡要素

**Ding Yongjian and Liu Fengjing.** 1995. Effect of climatic change of water balance of Qinghai Lake basin for the last 30 years and possible trends. *Scientia Geographica Sinica* 15(2):128-135.

Through the research of the data series on climate and hydrology in the Qinghai Lake basin, the effects of climatic change on water balance for the last 30 years are discussed. The results show that there is a close relationship between average precipitation and temperature and water balance. The lowering of the Qinghai Lake level for the recent 30 years is related to the decrease of precipitation, and evaporation from ground and surface water is influenced by temperature changes. The climate tends to be wet and warm. The water balance in the Qinghai Lake basin can maintain its present condition, and the level of the lake may even rise slightly. The authors also deal with the effects of melting underground ice on the water balance.

Keywords: climatic change, precipitation, air temperature, water balance elements



陈家其, 施能, 1995, 全球增暖下我国旱涝灾害可能情景的初步研究, 地理科学, 15(3):201-207

本文在竺可桢对历史冷暖期划分的基础上, 研究历史冷暖时期我国旱涝分布特征。对我国近500年旱涝等级资料加以计算, 结论认为, 随气候变暖, 中国大部分地区涝灾将增加。

关键词: 气候增暖 旱涝灾害  
灾害预测

**Chen Jiaqi and Shi Ning.** 1995. The preliminary study on possible serious floods and droughts in China under conditions of global warming. *Scientia Geographica Sinica* 15(3):201-207.

The drought/flood distribution characteristics of the last 500 years in China are studied, and the period is divided into several alternately cold and warm periods according to Prof. Zhu Kezhen's historical climatic division. The averages of flood/drought degree in the last 500 years are calculated. The results show that disastrous floods probably will increase in many parts of China under conditions of global warming.

Keywords: climate warming, disaster of flood and drought, disaster forecast

杨世伦, 陈吉余, 1995, 太湖流域  
洪涝灾害的形成和演变, 地理科学  
, 15(4): 307-314

本文研究了太湖流域洪涝灾害的形  
成和演变, 认为其成因除与充沛而  
集中的雨量和碟形洼地地势有关外  
, 还与海平面的相对上升、长江三  
角洲的向海推进及人口激增有关。  
研究表明, 下一世纪流域的降水量  
增加, 洪涝的威胁呈增长趋势。

关键词: 太湖流域 洪涝灾害  
成因

Yang Shilun and Chen Jiyu. 1995. Factors  
controlling floods in the Taihu Lake drainage area.  
*Scientia Geographica Sinica* 15(4):307-314.

The formation and evolution of floods in the Taihu  
Lake drainage area are discussed. Except for  
rainfall and relief, the formation factors of floods  
are associated with the rise of sea level, the  
advance of the Changjiang River delta to  
coastline, and the increasing population density.  
The rainfall of the drainage area will increase and  
the threat of flood will be aggravated in the next  
century.

Keywords: Taihu Lake drainage area, flood  
disaster, cause



王式功等, 1995, 我国西北地区黑  
风暴的成因和对策, 中国沙漠,  
15(1): 9-30

本文分析了我国西北地区沙尘暴的  
时、空分布特征和黑风暴天气发生  
的宏观气候背景及下垫面条件。以1  
993年5月5日发生的黑风暴天气过程  
为例, 研究了造成黑风暴天气的大  
尺度环流形势、主要天气系统和中  
尺度系统。并提出预报着眼点和防  
灾、减灾对策。

关键词: 西北地区 黑风暴  
成因与对策

Wang Shigong et al. 1995. Study on the  
formative causes and countermeasures of the  
catastrophic sandstorm in Northwest China.  
*Journal of Desert Research* 15(1):19-30.

In the paper, the catastrophic sandstorm that  
happened in Northeast China on 5 May 1993 is  
studied in terms of the time and space  
characteristics, climate conditions, and underlying  
surface conditions. The authors also analyze large-  
range circulation, main atmospheric system, and  
middle-range system. Suggestions for a warning  
system are given and countermeasures for  
forecasting and preventing future disasters.

Keywords: Northwest China, catastrophic  
sandstorm, formative causes and countermeasures

杨佐涛等, 1995, 塔克拉玛干沙漠腹地的气候表现, 中国沙漠, 15(3):293-298

本文对塔克拉玛干沙漠腹地和边缘气候资料进行对比分析, 认为从沙漠外缘至腹地温度呈升高趋势, 降水趋势不稳定。但愈深入沙漠内部, 湿度越低, 蒸发越大。

关键词: 塔克拉玛干沙漠  
气象要素

Yang Zuotao et al. 1995. Characteristics of the weather in the hinterland of the Taklimakan Desert. Journal of Desert Research. 15(3):293-298.

This comparison between the meteorological data of the hinterland of the Taklimakan Desert and the fringe area of the desert shows that the temperature rises from the edge to the hinterland of the desert. Precipitation has no distinctive trend. But the humidity becomes lower and the evaporation becomes higher nearer to the hinterland of the desert.

Keywords: Taklimakan Desert, meteorological factor



王谦, 陈景玲, 1995, 黄淮海平原干旱历时的概率特征研究, 农业气象, 16(1):23-26

本文研究了用旬降水量表示干旱历时概率分布的可行性以及黄淮海平原干旱历时的概率特征。另外, 还应用Sen的方法分析了黄淮海平原季节性干旱的年际历时的概率分布。

关键词: 干旱历时 概率特征  
黄淮海平原

Wang Qian and Chen Jingling. 1995. Probability feature of drought duration in Huang-Huai-Hai Plain. Agricultural Meteorology 16(1):23-26.

The authors analyzed the possibility of using precipitation of a ten-day period to examine drought duration and the probability features of drought duration of the Huang-Huai-Hai Plain. They also deal with yearly probability distribution of seasonal drought duration in the Huang-Huai-Hai Plain by applying Sen's method.

Keywords: drought duration, probability feature, Huang-Huai-Hai Plain

解思梅等, 1995, 南北两极海冰的相互关系, 科学通报, 40(7):632-635

本文使用NAVY—NOAA Joint Ice Center (JIC)

提供的SIGID海冰资料, 研究两极海冰之间的涛动关系。通过对南北两极海冰变化周期的分析, 发现两极海冰之间存在着强烈的相互作用, 形成了纬向加纵向的海冰涛动关系。这种涛动关系在特性上与大气中存在的涛动关系相似, 这与两极作为冷源对气候的影响是一致的。

关键词: 南极 北极 海冰相互作用

Xie Simei et al. 1995. Relationship between sea ice of the Antarctic and Arctic. Chinese Science Bulletin 40(7):632-635.

According to Sea Ice Grid (SIGRID) sea ice data provided by the U.S. Navy/National Oceanic and Atmospheric Administration (NAVY/NOAA) Joint Ice Center (JIC), the relationship between oscillations of sea ice of the two poles is studied. Through the analysis of the change cycle of sea ice of the two poles, it was concluded that there is intense interaction between sea ice of the two poles, which causes the oscillation both of altitude and longitude. The oscillations have high coincidence with oscillation in atmosphere because of the influence on climate by the cooling action of the two poles.

Keywords: Antarctic, Arctic, interaction between sea ice



韩建康等, 1995, 南极南设德兰群岛近百年平均气温变化趋势, 冰川冻土, 17(3):268-273

本文建立了南设德兰群岛1904年以来的年均气温变化序列(MAAT)。由5年滑动平均分析可知, 该地区以本世纪50年代为界, 后期比前期明显变暖, 增温变幅为0.8℃左右。其相对寒冷阶段为1910—1920年间、20、40和50年代末。50年代中期和80年代为最暖期。

关键词: 南设德兰群岛 年均气温变化趋势

Han Jiankang et al. 1995. Change trends of the mean annual air temperature in the last 100 years in the South Shetland Island, Antarctic. Journal of Glaciology and Geocryology 17(3):268-273.

The series of mean annual air temperature (MAAT) in the South Shetland Island since 1904 were set up. It indicates that an 0.8℃ warming started in the 1950s according to the five-year moving average curves of the MAAT. The comparatively cold periods were in the middle of the 1910-1920s, the end of the 1920s, the end of the 1940s, and the end of the 1950s. The warmer periods were the mid-1950s and 1980s.

Keywords: South Shetland Islands, MAAT, change trend

赵振国, 1995, 夏季青藏高原位势高度场的长期振荡与气候变化, 气象学报, 53(1):108-114

本文根据北半球500hPa月平均位势高度场资料, 研究了夏季(6—8月)青藏高原位势高度场的长期振荡及其与两大洋副热带环流的相互联系, 以及这种长期变化对全球和中国气候的影响。

关键词: 青藏高原位势高度  
长期振荡 气候变化

Zhao Zhenguo. 1995. Long term oscillation of the geopotential height over the Qinghai-Xizang Plateau in summer and its relationship to climate change. *Acta Meteorologica Sinica* 53(1):108-114.

Based on monthly 500 hPa height data in the Northern Hemisphere, the author studied the long-term change of the geopotential height over the Qinghai-Xizang Plateau in summer and its relationship with long-term oscillation of the subtropical circulation over the eastern Pacific and Atlantic. Additionally, the relationship of the geopotential height over the Qinghai-Xizang Plateau to the climate changes of China and the other regions in the world is also analyzed.

Keywords: geopotential height over the Qinghai-Xizang Plateau, long-term oscillation, climatic change



魏民, 仇永炎, 1995, 全球500hPa角动量与EP通量的季节变化, 气象学报, 53(2): 238-246

本文利用ECMWF提供的资料(1980—1988年)分析了500hPa全球东西风带的角动量和EP通量的季节过渡。结果表明, 角动量和EP通量都存在相应的季节性急变。季节性急变的发生时间在东西风带有所不同。  
关键词: 角动量 EP通量 季节变化

Wei Min and Qiu Yongyan. 1995. On the seasonal transition in global angular momentum and EP-flux at 500 hPa. *Acta Meteorologica Sinica* 53(2):238-246.

Based on the data provided from the European Centre for Medium-Range Weather Forecasts (ECMWF) from 1980 to 1988, the seasonal transition of angular momentum and Eliassen-Palm (EP)-flux for the easterly and westerly in the Northern and Southern Hemispheres are analyzed. It is found that there is a seasonal sudden change occurring to both the angular momentum and the EP-flux. The time of this seasonal sudden change is different in the easterly than in the westerly.

Keywords: angular momentum, EP-flux, seasonal transition

施能等, 1995, 中国近100年来4个年代际的气候变化特征, 气象学报, 53(4):431-439

本文研究了本世纪中国年平均气温、年降水量的气候趋势和4个年代际的气候变化特征及差异。结果认为, 20世纪中国西北、东北、华北明显变暖, 降水趋势值不大, 以负趋势为主。在数十年尺度的暖背景下, 大部分地区降水偏少。相应的降水特征是, 除了黄河以南及江淮流域降水比40年代多以外, 其他大部分地区降水偏少。

关键词: 气候变化 冷暖时段  
气候趋势系数

Shi Ning et al. 1995. Four-phase climate change features in the last 100 years over China. Acta Meteorologica Sinica 53(4):431-439.

The climate trend of the annual average air temperature and total annual rainfall and the four-phase climate features and differences in the present century are studied. The results indicate that the Northwest, Northeast and North China have become notably warmer this century and the rainfall trend is negative, but not significant. On the scale of tens of years there was considerably less rainfall in most of China in the warm background than in the cold background. The corresponding rainfall feature is that most areas experienced much less rainfall except south of the Huanghe River and over reaches of the Changjiang and Huaihe Rivers.

Keywords: climate change, cold-warm period, climatic trend coefficient



田荣湘等, 1995, 中国西北干旱区年降雨量的时空变化, 高原气象, 14(1):90-95

本文研究了西北地区年降雨量的变化规律, 把中国西部划分为6个降雨量性质不相关的区。通过对西北3个区的分析, 把年降雨量划分为8种不同的空间分布类型。分析表明, 西风系统是控制中国西北干旱区的天气系统的主要因素。在过去的30年间, 西北干旱区的气候并非都是变得越来越干, 不同的地区变化情况不同。

关键词: 中国西北干旱区 年降雨量

Tian Rongxiang et al. 1995. Spatial and temporal variation of annual rainfall in the northwest arid areas of China. Plateau Meteorology 14(1):90-95.

The variation of precipitation over 30 years is studied in this paper. West China is divided into six independent rainfall regions on the basis of annual rainfall during 30 years for 68 stations. Eight types of different spatial distribution of rainfall are divided by analysis for 3 areas in Northwest China. The results show that the control weather system in the arid area of Northwest China is mainly a westerly system. In the past 30 years, not all the northwest regions became arid; climate change was different in different areas.

Keywords: the northwest arid areas of China, annual rainfall

李栋梁等, 1995, 中国夏季月平均气温异常研究, 高原气象, 14(2):165-175

本文根据1951—1990年历年月平均气温标准化距平资料, 研究了中国40年夏季温度异常的空间结构及时间演变特征。结果表明, 中国夏季温度异常在空间上主要有6个类型: 长江中下游、华南、东北、青藏高原、西北和华北。旋转主分量的时间变化趋势反映了中国各主要气候区夏季气温的异常特点。40年来的基本趋势是: 长江中下游由热—凉; 华南、西北由热—凉—热; 东北、华北、青藏高原由凉—热。夏季月平均气温的持续性较好, 但周期性较差。在同位相的短周期振动中西北、华北均比华南地区超前变化。  
关键词: 夏季气温异常 时空变化 旋转主成分分析 交叉谱

Li Dongliang et al. 1995. A study on the anomalous variation of monthly mean temperature during summer in China. Plateau Meteorology 14(2):165-175.

The spatial structure and temporal feature of summer temperature anomalies are studied. Six types of summer temperature anomaly are classified as follows: the middle and lower reaches of the Yangtze River, South China, Northeast China, the Qinghai-Xizang Plateau, Northwest China, and North China. Analyzing the temporal tendency of rotated empirical orthogonal function (REOF) mirrors the anomalous features of summer temperature over the main climatic areas in China. The basic variation tendencies of 40 years are that the middle and lower reaches of the Yangtze River vary from warm to cool; South China and Northwest China from warm to cool to warm; Northeast China, North China and the Qinghai-Xizang Plateau, from cool to warm. There is a good persistence in the summer mean temperature, but the periodicity is not obvious. In the short-period oscillations of the same phase, Northwest China appears to experience variation before other areas.

Keywords: summer temperature anomaly, temporal and spatial variation, rotated empirical orthogonal function (REOF), cross spectrum



马柱国, 1995, 地温异常与1991年江淮大水、江南大旱关系的初步分析, 高原气象, 14(2):185-191

本文根据江淮主涝区深层(1.6m, 3.3m)地温距平场资料, 研究了下垫面热力异常与洪涝灾害的关系。结果表明, 江淮流域特大洪涝对应前期地温持续异常高温, 江南大旱对应前期地温持续异常低温。前期地温的持续异常高温对应汛期多雨, 前期地温的持续异常低温对应汛期少雨。

关键词: 地温距平 持续异常 降水距平百分率

Ma Zhuguo. 1995. A preliminary analysis of the relationship between the anomalies of soil temperature and either floods in the Yangtze-Huai River reaches or strong drought south of the Yangtze River in the summer of 1991. Plateau Meteorology 14(2):185-191.

The relationship between the thermal anomaly of underlying surface and flood disasters is studied by using the soil temperature data of seasonal mean soil temperature at the depths of 3.2 m and 1.6 m in the Yangtze-Huai River reaches. The results indicate that the range of floods corresponds to the long duration of high soil temperatures in the area, and that the range of strong drought corresponds to the long duration of low soil temperatures south of the Yangtze River. Meanwhile, the durable anomaly of high soil temperature at an early stage corresponds to an increase in rain in the same area, and the durable



anomaly of low soil temperature at an early stage corresponds to drought in the same area.

Keywords: the departure of soil temperature, the durable anomaly, the percentage of precipitation departure



马晓波, 1995, 50年来蒙古国与北半球的气温变化, 高原气象, 14(3):348-358

本文利用蒙古25个台站52年月平均气温资料分析了蒙古的气温变化趋势, 并与北半球进行了比较。结果表明, 52年来蒙古年平均气温呈上升趋势, 50年代是蒙古相对较冷的时期。北半球自1940年以来年气候变暖, 60年代和70年代为较冷时期, 其余为暖期。蒙古气温分布主要有3种类型: 全暖、西暖东凉和北暖南凉。气候变暖主要表现在冬季变暖。冬季变暖夏季变凉不仅是我国, 也是蒙古及北半球50年来的气候特点之一。

关键词: 蒙古国 北半球 气温变化

**Ma Xiaobo.** 1995. Air temperature variations in Mongolia and the Northern Hemisphere for recent 50 Years. Plateau Meteorology 14(3):348-358.

Monthly mean air temperature variations at 25 stations in Mongolia are studied and are compared with Northern Hemisphere air temperature (NHT). It is found that the annual mean air temperature of 52 years in Mongolia is increasing. The 1950s are the cool period in Mongolia, other periods are warm. But in the Northern Hemisphere, the period of the 1960s-1970s is cool, and other periods are warm. Three kinds of variation in Mongolia are: warm, west warm and east cool, and north warm and south cool. Climate warming mainly shows in winter. Warmer winter and cooler summer are one of the climate characteristics for the most recent 50 years not only in China but also in Mongolia and the Northern Hemisphere.

Keywords: Mongolia, the Northern Hemisphere, air temperature variation

汤懋苍等, 1995, 冬季亚洲高压的中心位置何在, 高原气象, 14(3): 379-384

本文用保风投影法分析了冬季亚洲高压, 认为在冬季整个蒙古高原、青藏高原和黄土高原为高压控制, 高压中心有三个, 其中最强中心位于青藏高原主体南部, 另外两个中心较弱, 一个位于蒙古西北部, 一个位于祁连山地区。作者认为应将“蒙古高压”改称为“亚洲高压”或“高原高压”更符合实际。

关键词: 亚洲高压 冬季  
气压分析法

Tang Maocang et al. 1995. Where is the center location of the Asian high pressure in winter. Plateau Meteorology 14(3):379-384.

The Asian high in winter was analyzed using the wind-conserved projection method. The result shows that the Mongolian Plateau, Tibetan Plateau, and Loess Plateau are under the control of high pressure with three centers in winter. The highest center is in the southern part of the Tibetan Plateau, and the other two centers are located in the northwest part of Mongolia and the Qilian mountain area, respectively. The writers believe that it is more reasonable to call the high an Asian high or Plateau high than a Mongolian high.

Keywords: Asian high, in winter, pressure analysis method



魏凤英, 曹鸿兴, 1995, 中国、北半球和全球的气温突变分析及其趋势预测研究, 大气科学, 19(2):140-148

本文采用均值差异假设检验研究了中国、北半球和全球气温历史序列的突变现象, 分析了气温的突变指数。研究证明, 按照分析出的突变点将气温序列分段建模, 效果优于整段序列的模型。研究表明, 本文叙述的均生函数累加延拓的时序建模方案, 对气温序列有很好的拟合和预测效果。

关键词: 突变 趋势预测  
均生函数

Wei Fengying and Cao Hongxing. 1995. Detection of abrupt changes and trend predictions of the air temperature in China, the Northern Hemisphere, and the world. Scientia Atmospherica Sinica 19(2):140-148.

Abrupt changes of yearly air temperature series on China, the Northern Hemisphere, and the world are detected with a statistical test. The abrupt change indexes of the three temperature series are analyzed. The results show that the models of several periods, which are divided from the temperature series by the points of the abrupt changes, are far better than the model of the whole temperature series. It indicates that the modeling scheme based on integrating an extension series of the mean generating function is feasible for the simulation and prediction of the temperature series.

Keywords: abrupt changes, trend prediction, mean generating function

李栋梁等, 1995, 我国西北地区冬季平均气温的气候特征, 大气科学, 19(2):192-199

本文选取中国西北五省的资料分析了最近30—40年西北地区冬季平均温度的时间分布特征及变化趋势。结果表明, 西北地区冬季平均气温变化在空间上具有很好的一致性, 但也存在空间分布的差异。30—40年来西北地区冬季气温总趋势是在变动中逐渐变暖的, 青藏高原及个别高山站冬季气温变化趋势与此有所不同。西北地区冬季气温年际变化具有8年周期。

关键词: 西北地区 气温变化

主成分分析 冬暖

Li Dongliang et al. 1995. Climatic features of the mean temperature in Northwest China during wintertime. Scientia Atmospherica Sinica 19(2):192-199.

The distribution and variations in the winter mean air temperature during the last 30 to 40 years in Northwest China are studied by main component analysis using the data of five provinces of Northwest China. Results show that the mean temperature variations are spatially well consistent in winter and that differences in the spatial distributions of temperature variation also exist. Analysis indicates that the general trend of the winter temperature change in Northwest China has been a gradual warming with fluctuations for the last 30 to 40 years. In contrast, the Qinghai-Tibetan Plateau and very few mountain stations have experienced a different trend. The annual variation of the winter temperature in Northwest China had a quasi-eight-year periodic oscillation.

Keywords: Northwest China, air temperature variation, main component analysis, warm winter



林学春等, 1995, 中国近百年温度序列, 大气科学, 19(5): 525-532

根据1873—1990年全国温度资料, 讨论了近百年全国温度序列的气候变化, 指出中国近百年温度变化与北半球的变化很相似, 都有两个增暖时段即40年代和80年代的增温。北半球平均温度80年代要比40年代高, 而中国平均温度80年代要比40年代低。

关键词: 温度序列 气候变化

Lin Xuechun et al. 1995. Series of average air temperature over China for the last 100-year period. Scientia Atmospherica Sinica 19(5):525-532.

Based on the analysis of the mean temperature data in China for the period of 1873-1990, the climatic variations of the temperature in the recent 100 years are discussed. It points out that the variations of the mean temperature over China are similar to those over the Northern Hemisphere. There are two periods in the last 100 years in which temperature was higher (i.e., the 1940s and 1980s). The mean temperature of the Northern Hemisphere in the 1980s is higher than that in the 1940s, but the mean temperature of China in the 1980s is lower than that in the 1940s.

Keywords: temperature series, climatic change

王绍武, 叶瑾琳, 1995, 近百年全球气候变暖的分析, 大气科学, 19(5):545-553

本文根据1880—1991年资料对比分析了IPCC, Vinnikov, Jones及Hansen的北半球, 南半球及全球共12个地面温度序列, 以及中国的气温序列。1890年代, 1920年代中及70年代末有3次突然气候变暖。分析表明, 近百年来气候呈变暖趋势, 总的变暖趋势与CO<sub>2</sub>浓度及太阳活动有密切关系。火山活动也可能有一定作用。前两次突变可能与火山活动沉寂有关, 最后一次突然变暖则可能是温室效应加剧的结果。  
关键词: 气候变暖 气候突变 温室效应

井传才等, 1995, 1993年世界气候异常原因及大气对东传型ENSO事件响应的诊断分析, 热带气象学报, 11(1):57-65

本文通过对1993年全球大气及热带海洋异常状况的诊断分析, 揭示了1993年世界气象灾害频频发生的原因。结论认为, 大气环流的异常变化对1993年东传型ENSO事件的响应几乎同步。1991、1993年两次东传型ENSO事件在短期内相继发生使副高持续异常, 达到近40多年来最强, 同时引起西风带槽脊异常变化。1992年赤道中太平洋异常暖水的长期滞留是1993年西太平洋副高脊线位置偏南并显著西伸的原因。

Wang Shaowu and Ye Jinlin. 1995. An analysis of global warming during the last one hundred years. Scientia Atmospherica Sinica 19(5):545-553.

Data from the 1880-1991 annual surface temperature series of the Intergovernmental Panel on Climate Change (IPCC), Vinnikov, Jones, and Hansen for the hemisphere and the globe and that for China are analyzed. The climatic changes have a warmer tendency. And abrupt warming was found in the 1890s, the middle of 1920s, and the end of 1970s. Solar activity and concentration of CO<sub>2</sub> are closely correlated with the temperature variations. Volcanism also contributed to the warming. However, the abrupt warming in the 1890s and 1920s may have been caused by the cessation of volcanic eruptions, and the abrupt warming end of the 1970s seems to relate to the enhanced greenhouse effect, though the intensification of solar activity may also play a part.

Keywords: global warming, abrupt change of climate, greenhouse effect



Jing Chuancai et al. 1995. A diagnostic analysis of the cause for anomalous world climate in 1993 and the characteristics of the atmosphere corresponding to eastward-transmitting ENSO event. Journal of Tropical Meteorology 11(1):57-65.

Through the analysis of the variability of global atmospheric and tropical oceanic anomalies, the main cause for the world meteorological catastrophe in 1993 is confirmed. The anomalous variation of atmosphere circulation has an almost synchronous response to the eastward-transmitting El Niño Southern Oscillation (ENSO) events of 1991 and 1993. The two eastward-transmitting ENSO events of 1991 and 1993 within a short period caused the persistence of anomalous variation of the subtropical high and made the subtropical high the strongest one for about 40 years. They also caused variation of the trough and ridge of the westerly belt. The persistence of anomalous warm water in the central equatorial Pacific in 1992 is the effect factor that caused the

关键词: 气象灾害 ENSO事件  
PNA相关型 大气环流

position of the subtropical high ridgeline in the western Pacific to move to the south and the westward stretch ridge point of the subtropical high to move to the west in 1993.

Keywords: meteorological catastrophe, ENSO event, correlation type of Pacific-North American (PNA), atmosphere circulation



丁治英, 陈久康, 1995, 有效位能和冷空气活动与台风暴雨增幅的研究, 热带气象学报, 11(1):80-85

本文分析了台风范围的总有效位能、涡旋有效位能, 找出了台风暴雨增幅原因。冷空气处在台风外围时有效位能释放最多, 暴雨增幅最大。冷空气侵入台风中心后, 非绝热加热迅速减小, 不利于降水增幅。  
关键词: 有效位能 台风 暴雨 增幅

**Ding Zhiying and Chen Jiukang.** 1995. A study on the relationship between enhancement of typhoon rain and available potential energy and cold air. *Journal of Tropical Meteorology* 11(1):80-85.

The total and vortex available potential energy are studied using results of a numerical simulation. The causative factor of rain enhancement is revealed. It is found that the release and enhancement of potential energy are at their maximum when cold air from a typhoon causes the maximum enhancement of heavy rains. The enhancement of heavy rains is checked when cold air enters the eye thereby greatly reducing adiabatic heating.

Keywords: available potential energy, typhoon, heavy rains, enhancement



施能, 曹鸿兴, 1995, 与厄尔尼诺有关的北半球100hPa大气环流异常, 热带气象学报, 11(2):106-114

本文研究了北半球100hPa冬季遥相关现象。结论认为, 当厄尔尼诺发展到盛期(冬季)时, 100hPa出现PNA型, 这种对应关系比500hPa好些。并且在厄尔尼诺发生年春季, 100hPa高度比反厄尔尼诺年大范围偏低, 发生前的冬季也有此明显特征。

**Shi Ning and Cao Hongxing.** 1995. The Northern Hemisphere 100 hPa atmospheric circulation anomaly related to El Niño. *Journal of Tropical Meteorology* 11(2):106-114.

The northern winter 100-hPa teleconnection patterns are studied, and it is discovered that a Pacific-North American (PNA) flow pattern occurs at 100 hPa in northern winter. When El Niño is at the prime of the season (in winter), a vigorous PNA pattern occurs at 100 hPa at a better corresponding rate than at 500 hPa. In the spring of El Niño years, the 100 hPa height is lower over a large area than in La Niña years; similar significant features are seen in preceding winters.

关键词: 100hPa高度场 PNA遥相关  
厄尔尼诺 环流异常 强度指数

Keywords: 100 hPa height field, PNA  
teleconnection, El Niño, circulation anomaly,  
intensity index



叶愈源, 赵文兰, 1995, 近百年长江中游旱涝的变化, 热带气象学报, 11(2):181-186

Ye Yuyuan and Zhao Wenlan. 1995. Variations of floods and drought in the middle reaches of Changjiang River Valley during the last 100 years. Journal of Tropical Meteorology 11(2):181-186.

利用史料和1951—1990年汉口站与全国160站雨量记录重建的近百年长江中游区平均逐年旱涝等级指数序列研究了旱涝变化特征。20世纪气候表现为前涝后旱, 分为6个交替出现的旱涝阶段, 具有22年、5—6年和2—3年的准周期振动。

On the basis on historical data and rain gauge records of Hankou station and 160 stations of China during 1951-1990, an index series of mean year-to-year categories for drought and flood in the middle reaches of the Changjiang River Valley is reconstructed to study the variation characteristics. It is found that flooding mostly occurs in the early part of this century whereas drought dominates the latter half. There are 6 stages of drought and flood periods and quasi-periodic oscillations of 22 years, 5-6 years, and 2-3 years.

关键词: 气候变化 旱涝 近百年  
长江中游

Keywords: climatic change, drought and flood, the last 100 years, middle reaches of Changjiang river valley



李崇银, 1995, 热带大气季节内振荡的几个基本问题, 热带气象学报, 11(3):276-288

Li Chongyin. 1995. Some fundamental problems of intraseasonal oscillation in the tropical atmosphere. Journal of Tropical Meteorology 11(3):276-288.

在一系列资料分析、数值模拟试验和理论研究的基础上, 研究了热带大气季节内振荡的地域特征、空间尺度特征、水平传播特征、与中高纬度大气季节内振荡的联系、同El Nino间的相互作用以及热带大气季节内振荡的动力学机制。

Some fundamental problems of intraseasonal oscillation in the atmosphere are studied based on a series of data analyses, numerical simulations, and theoretical studies. Topics include regional location, spatial scale and horizontal propagation, intraseasonal oscillation in the mid-high latitudes, the interaction between El Niño and tropical intraseasonal oscillation, and some dynamical mechanisms that excite tropical atmospheric intraseasonal oscillation.

关键词: 热带大气 季节内振荡  
El Nino 相互作用 动力学机制

Keywords: tropical atmosphere, intraseasonal oscillation, interaction with El Niño, dynamical mechanism

张光智等, 1995, 近百年西北太平洋热带气旋年频数的变化特征, 热带气象学报, 11(4):315-323

本文利用1884—1988年西北太平洋热带气旋年频数资料, 分析了热带气旋年频数的多年变化及其与海温、南方涛动指数、太阳黑子数和环流型日数等的统计关系。结果认为, 热带气旋年频数的变化具有明显的21年、31年、15年和6年左右的周期和持续期平均为12年左右的阶段变化。在1931、1959和1977年有三次较明显的转折。热带气旋年频数在厄尔尼诺年有冬春季偏少、夏秋季偏多的趋势。在平流层西风位相时, 北半球纬向环流的异常发展及太阳活动的增强有助于热带气旋的生成和发展。

关键词: 热带气旋 厄尔尼诺  
环境变量

Zhang Guangzhi et al. 1995. A study on the variations of annual frequency for tropical cyclones in the Northwest Pacific during the last hundred years. Journal of Tropical Meteorology 11(4):315-323.

The variation of annual frequency of tropical cyclones (TC) and its relationship with sea surface temperatures (SST), the Southern Oscillation Index, sunspot relative number, and number of days for specific circulation patterns were studied using data from 1884-1988 of annual frequency for Northwest Pacific TC occurrence. It indicates obvious periods of 21, 31, 15, and 6 years and sustaining periods lasting 12 years in average in the variation of annual TC frequency. There are three well-defined processes of inflexion over the past hundred years: 1931, 1959, and 1977. The results also suggest that there is an insignificant statistical tendency of annual TC frequency decreasing (increasing) in winter/spring (summer/autumn) in the El Niño years. When the stratosphere was in the zonally westerly phase, the northern zonal circulation would abnormally develop and solar activity would enhance the generation and development of a TC.

Keywords: tropical cyclone, EL Niño, environmental variable



## East Asia Monsoon

严中伟, Nicole Petit-Maire, 1995, 关于全球冷暖和亚、非夏季风区干湿变迁之联系的一个述评, 地理学报, 50(5):471-479

本文根据多种资料分析结果研究不同时间尺度上全球热状况对中国东部和其他低纬度亚非夏季风影响区干湿变迁的宏观控制作用。气候对全球变化的反映因时间尺度不同而异, 在百年以上时间尺度上, 全球变暖而夏季风强从而导致有关区域多雨偏湿, 全球冷则夏季风区域多偏干; 但较短时间尺度上的全球性冷暖波动不会使夏季风系统和干湿状况产生一致响应。

Yan Zhongwei and Nicole Petit-Maire. 1995. On the relationship between global thermal variations and the wet/dry alterations in the Asian and African monsoon areas. Acta Geographica Sinica 50(5):471-479.

On the basis of various data analyses, this paper studies the impacts of past global warm/cold variations on the humidity changes along the low-latitude summer monsoon range in Asia and Africa. The regional climates respond differently to global changes at different time-scales. The summer monsoons are generally stronger during global warmer periods at a time-scale longer than 100 years, thus leading to wetter conditions. At short time-scales, the relationship between the summer monsoon and warm/cold variations becomes weaker.

关键词: 全球变化 区域干湿变迁  
夏季风

Keywords: global change, regional wet/dry  
alternation, summer monsoon



张信宝, 1995, 晚更新世以来的季风变化对晋陕蒙接壤区现代侵蚀的影响, 中国沙漠, 15(3):207-209

**Zhang Xinbao.** 1995. The influence on monsoon climate changes since the late Pleistocene on current erosion in the JinShanMeng contiguous region of the Loess Plateau. Journal of Desert Research 15(3):207-209.

本文研究了晚更新世以来冰期冬季风和间冰期夏季风对黄土高原地区的影响, 认为沙黄土和较多降水的组合, 使晋陕蒙接壤区成为黄土高原现代侵蚀最剧烈的地区。

The paper focuses on the effect on the Loess Plateau of the winter monsoon in glacial period and summer monsoon in interglacial. During the interglacial period of Holocene, the combination of an erodible surface layer and high precipitation resulted in the current soil erosion in the Jin-Shan-Meng contiguous region which is the severest in the Loess Plateau.

关键词: 晋陕蒙接壤区 季风 侵蚀

Keywords: JinShanMeng contiguous region, monsoon, erosion



孙淑清, 孙柏民, 1995, 东亚冬季风环流异常与中国江淮流域夏季旱涝天气的关系, 气象学报, 53(4):440-450

**Sun Shuqing and Sun Baimin.** 1995. The relationship between the anomalous winter monsoon circulation over East Asia and summer drought/flooding in the Yangtze and Huaihe River Valleys. Acta Meteorologica Sinica 53(4):440-450.

本文分析了长江淮河流域夏季旱涝各10年的资料, 结果认为, 旱涝年前冬东亚冬季风环流存在着差别, 长江淮河流域夏季旱年前冬, 欧亚中高纬呈经向型环流, 寒潮活动频繁, 东亚沿海中低纬冷涌活动强烈, 跨赤道气流加强, 南海至菲律宾地区的对流活动活跃。涝年前冬基本上为相反形势。

Data from ten cases of abnormal drought or flooding summers in the lower-middle reaches of the Yangtze River and Huaihe River valleys are analyzed. It is noted that there are two kinds of winter monsoon circulation with respect to summer drought and flooding. In winters preceding a drought year, the flow pattern in the mid-high latitudes shows a strong meridional circulation over Eurasia, a cold surge in middle and lower latitudes, and convective activity over the southern part of the South China Sea and the Philippines so that the cross-equatorial current towards the Southern Hemisphere is greatly strengthened. On the contrary, in winters

关键词: 冬季风 大气环流 旱涝



preceeding a flooding year, those factors are much weaker.

Keywords: winter monsoon, general circulation, drought/flooding



黄士松, 汤明敏, 1995, 我国南方初夏汛期和东亚夏季风环流, 热带气象学报, 11(3):203-213

本文根据低层夏季风热力学性质与流场演变特点讨论了我国南方初夏汛期同夏季风活动的联系, 分析了东亚夏季风环流建立过程的阶段性和类型, 认为汛期的开始与结束同夏季风前沿位置变动一致。夏季风发展时期低纬大气环流的演变过程可归纳为4类。

关键词: 华南前汛期 梅雨期  
东亚夏季风 季风环流建立过程  
季风体系结构

**Huang Shisong and Tang Mingmin.** 1995. The early summer flood periods of South China and the summer monsoon circulation of East Asia. *Journal of Tropical Meteorology* 11(3):203-213.

The relationship between the early summer flood periods of southern China and the activities of the summer monsoon is analyzed on the basis of thermodynamic characteristics of the summer monsoon and the change of the lower layer wind fields. The establishment processes of the summer monsoon circulation of East Asia are investigated. The establishment processes of the monsoon circulation from the very beginning of the arrival of the monsoon to the period of greatest of development are classified into four categories.

Keywords: first flood period of South China, the plum rains period, the summer monsoon circulation of East Asia, the establishment processes of the monsoon circulation, monsoon regime structure

喻世华,杨维武, 1995, 季节内西太平洋副高异常进退的诊断研究, 热带气象学报, 11(3):214-222

本文对两次季节内西太平洋副高的异常进退进行了诊断研究。结论认为, 季节内西太平洋副高异常进退是整个北太平洋副高异常进退的结果, 表现为东太平洋副高的活动, 相应西太平洋副高也有一次活动过程。东太平洋副高的异常进退是被南亚季风区到太平洋信风区的异常加热造成的东太平洋对流层上部辐散风场汇合下沉区的变化所激发。

关键词: 副热带高压 异常进退  
遥相关关系 诊断研究

Yu Shihua and Yang Weiwu. 1995. Diagnostic study of intraseasonal anomalous progression and retrogression of a subtropical high over the Western Pacific. Journal of Tropical Meteorology 11(3):214-222.

The authors study two intraseasonal progressive and retrogressive processes of an anomalous subtropical high in the Western Pacific. The anomalous progression and retrogression of this high are the result of an anomalous subtropical high in the Northern Pacific and are intraseasonally teleconnected with one in the Eastern Pacific. The anomalous progression and retrogression of the subtropical high in the Eastern Pacific is the result of anomalous heating through the monsoon area in South Asia and the trade-wind zone in the Pacific Ocean.

Keywords: subtropical high, anomalous progression and retrogression, teleconnection, diagnostic study



王永中, 夏友龙, 1995, 基本流和切变流影响下的南亚季风, 热带气象学报, 11(3):231-239

采用赤道平衡模式及低阶谱方法, 建立了描写南亚冬夏季风的非线性方程, 分析了基本气流、一次切变流和二次切变流对南亚季风形成、转换和强度的影响, 指出一次切变流对南亚季风影响与基本流及二次切变流对南亚季风的影响明显不同。

关键词: 南亚季风 低阶谱方法  
切变流

Wang Yongzhong and Xia Youlong. 1995. South Asia monsoon affected by basic and shear flow. Journal of Tropical Meteorology 11(3):231-239.

The nonlinear equation describing the winter and summer monsoon in South Asia is built by using equatorial balanced model and low-order spectral method. The effects of the basic flow, and first-order and second-order shear on the formation, transformation, and intensity of the monsoon in South Asia are discussed. The results show that there is an evident difference between the influence of first-order shear on monsoons in South Asia and that of the basic flow and second-order shear on monsoons in South Asia.

Keywords: monsoon in South Asia, low order spectral method, shear flow

江宁波, 罗会邦, 1995, 南海夏季风爆发前后亚洲地区的大尺度环流突变, 热带气象学报, 11(4):289-296

本文用1980—1986年的ECMWF资料分析了南海季风爆发前后大气环流突变的平均特征。南海季风的爆发一般发生在5月10日前后, 大气环流出现一次明显突变—高空南亚高压骤然北跳。青藏高原东南坡的加热对南海季风的爆发可能比较重要。

关键词: 南海夏季风 爆发  
东亚地区 大气环流突变

Jiang Ningbo and Luo Huibang. 1995. Circulation evolution in Asia around the time of the burst of summer monsoon over the South China Sea. Journal of Tropical Meteorology 11(4):289-296.

Based on an analysis of European Centre for Medium-Range Weather Forecasts (ECMWF) data of 1980-1986, the average characteristic of the time evolution of the general circulation over the South China Sea is studied. The first transition occurs around 10 May, characterized by the sudden movement of the center of the South Asian High. It is found that the heating of the southeast of the Qinghai-Xizang Plateau may be important to the first transition over the South China Sea.

Keywords: summer monsoon over the South China Sea, burst, East Asia, transition of atmospheric circulation



余斌, 黄荣辉, 1995, 热带对流活动与低频波流相互作用, 热带气象学报, 11(4):297-305

本文利用ECMWF客观分析资料和诊断分析的方法研究了1983/1984和1986/1987两年冬季中纬度地区低频波流间的相互作用特征, 认为热带地区对流活动的差异对于这种相互作用具有重要影响。

关键词: 热带对流 低频波动  
波流相互作用

Yu Bin and Huang Ronghui. 1995. Relationships between different tropical convective activities and low-frequency wave mean flow interactions. Journal of Tropical Meteorology 11(4):297-305.

Based on European Centre for Medium-Range Weather Forecasts (ECMWF) objective analysis data, the interaction characteristics of frequency wave and mean flow in the mid-latitude during the winter years 1983-1984 and 1986-1987 have been studied using a diagnostic analysis method. The authors point out that tropical convective activity has an important effect on the frequency wave/mean flow interaction process.

Keywords: tropical convection, low-frequency fluctuation, wave-mean flow interaction

何金海等, 1995, 中国东部地区降水季节内变化的季节锁相, 热带气象学报11(4):370-374

本文用中国东部地区30年逐日降水资料分析了中国东部地区降水的季节锁相特征在江淮流域和华南地区的不同表现, 研究了它同东亚季风季节内变化的联系。结果表明, 江淮梅雨同华南夏季风降水都具有季节锁相特征, 前者呈单峰分布, 后者呈双峰分布, 二者降水量的季内变化均具有20—25天的周期振荡特征。江淮流域降水的峰值和华南地区的第一个峰值主要受副热带季风影响, 华南地区的第二个降水峰值受南海热带季风影响。

关键词: 中国东部 降水 气候特征 季节锁相 季内变化

He Jinhai et al. 1995. Seasonal interlock of the intraseasonal variations of rainfall in East China. Journal of Tropical Meteorology 11(4):370-374.

Based on the daily rainfall data for 30 years in East China, the seasonal interlock characteristics of precipitation in the Yangtze-Huaihe River Reach and South China and their association with seasonal variations of the East Asian monsoon are analyzed. Both the Jianghuai MeiYu and South China summer monsoon rains have seasonal interlock characteristics; the former shows a single-peak distribution whereas the latter displays a double-peak distribution. Intraseasonal variations of precipitation in both areas show a periodic oscillation of 15 to 25 days. The peak value of precipitation in the Yangtze-Huaihe River Reach and the first peak value in South China are mainly affected by the subtropical monsoon. The second peak value of precipitation in South China is influenced by the South China Sea tropical monsoon and closely related to the tropical cyclone activities in the corresponding period.

Keywords: East China, precipitation, climatic characteristics, seasonal interlock, intraseasonal variation



## Historical Climate Change

邵亚军, 李保生, 1995, 克里雅河上游流域黄土中孢粉组合与环境, 中国沙漠, 15(1):37-41

本文认为, 末次冰期以来克里雅河上游流域黄土堆积的植被类型属荒漠草原类型, 以耐旱的麻黄、藜、蒿等草本植物为主, 但也出现过云杉、冷杉、松属等针叶树组成的疏林草原。说明从那时以来的黄土堆积过程中, 在总的持续干旱的荒漠草原环境下也存在相对的干湿波动。

关键词: 克里雅河上游流域 黄土孢子花粉 荒漠草原植被 干旱环境

Shao Yajun and Li Baosheng. 1995. The Loess sporo-pollens and the environment of the upper reach of Keriya River. Journal of Desert Research 15(1):37-41.

The authors note that the vegetation in the upper reach of the Keriya River is mainly composed of the desert-steppe herb, such as drought-resistant *Ephedra*, *Chenopodiaceae*, and *Artemisia*, since the last glacial age. However, there are also traces of a sparse-tree steppe environment composed of *Picea*, *Abies*, and *Pinus*. It is suggested that relatively dry and humid fluctuations occurred in the persistent arid desert-steppe environment.

Keywords: upper reaches of Keriya River, loess sporo-pollens, desert-steppe vegetation, arid environment

刘光秀等, 1995, 全新世大暖期若而盖的植被与气候, 冰川冻土, 17(3):247-249

本文根据若而盖DC剖面系统的孢粉记录和<sup>14</sup>C测年, 认为该区全新世大暖期发生于9-

3KaBP, 当时气候湿润; 植被类型为针叶阔叶混交林。大约在7-6KaBP间, 气候变暖, 落叶阔叶树种增加, 标志着全新世大暖期。6-5 KaBP间, 植被稀疏, 说明此间有一次气温变冷的波动。

关键词: 植被 气候 全新世大暖期 若而盖

Liu Guangxiu et al. 1995. The vegetation and climate of Holocene Megathermal in Zoige, Northwestern Sichuan, China. Journal of Glaciology and Geocryology 17(3):247-249.

Based on an analysis of the pollen record and carbon-14 dating in Zoige, it is suggested that the Holocene megathermal took place about 9 to 3 ka BP, having vegetation of coniferous and deciduous broadleaf mixed forest, while climate is warmer and wetter in this area. About 7 to 6 ka BP, broadleaf vegetation increased indicating the maximum of the Holocene megathermal. The absence of pollen about 6 to 5 ka BP represents a cooling change in climate.

Keywords: vegetation, climate, Holocene megathermal, Zoige



## Impacts

张福春, 1995, 气候变化对中国木本植物物候的可能影响, 地理学报, 50(5):402-410

本文通过对近30年的物候资料和气候资料的统计分析, 得出气温是影响中国木本植物物候的主要因子, 建立了物候与年平均气温的线性统计模式。计算出气温每升高1°C, 上半年的物候提前3-

4日, 下半年则推迟3-

4日, 年绿叶期延长6-

8日。当CO<sub>2</sub>倍增, 年均温上升1.0-

1.8°C时, 绿叶期将比现在延长8-

12日, 且北方物候现象的提前或推迟幅度较南方大。

关键词: 气候变化 物候 全球变化 植物生态学

Zhang Fuchun. 1995. Effects of global warming on plant phenological events in China. Acta Geographical Sinica 50(5):402-410.

Based on the data of the past 30 years, the effects of global warming on phenological events of China are discussed. Atmospheric temperature is the most important factor influencing plant phenophase. The author establishes a linear model that contains only phenophase and annual mean temperature factors. The calculated result indicates that under a 1°C rise of annual mean temperature, phenological events of trees in spring in China will occur about 3 to 4 days earlier but may be postponed for 3 to 4 days in autumn. The greenleaf stage will be prolonged for 6 to 8 days. It also assumes the scenario of a doubled carbon dioxide content in the next century which carries a 1.0 to 1.8°C rise in the annual mean temperature in China, with the greenleaf stage prolonged for 10 to 12 days. Moreover, the time of phenological events in the northern part of China will increase more than that in the southern part.

Keywords: climate change, phenology, global warming, plant ecology

丁登山, 1995, 论气候在西非萨赫勒地带荒漠化中的作用—兼谈近期人类活动影响, 干旱区地理, 18(3):25-31

本文讨论了气候在荒漠化中的作用, 认为气候在荒漠化中的作用具有复杂性, 包括了直接作用和间接作用, 在单独起作用的同时, 又与人类过渡的经济活动因素相结合发挥作用。文章还认为, 近几十年来, 西非撒赫勒地带的迅速荒漠化, 主要由人类过渡的经济活动造成。

关键词: 撒赫勒地带 荒漠化 气候

**Ding Dengshan.** 1995. On the effect of climate on desertification in the Sahel, West Africa: With discussion on the effect of human activities. *Arid Land Geography* 18(3):25-31.

The effect of climate on desertification in the Sahel in West Africa is discussed in this paper. Climate has complicated effects on desertification, including both direct and indirect ones. Climate not only can play a role on the desertification by itself but also in conjunction with excessive human economic activities. The paper concludes that rapid desertification in the area for the last several decades was mainly caused by excessive human economic activities.

Keywords: Sahel, desertification, climate



温跨达, 1995, 未来气候对南疆东部的影响, 干旱区地理, 18(4):61-64

本文分析了南疆东部的气候变化趋势。气候变化呈变暖趋势, 导致土壤湿度下降, 冰川融化加剧。这将对南疆东部水资源和农业产生一定的影响。文章最后提出一些对策和建议。

关键词: 未来气候 气候变化  
南疆东部

**Wen Kuada.** 1995. Effect of future climate on the eastern part of South XinJiang. *Arid Land Geography* 18(4):61-64.

With a rise in air temperature, the climate will warm in the eastern part of South XinJiang. Soil humidity will decrease and the melting of glaciers in the Eastern Kunlun Mountain and the Altan Mountain will become extreme. The climate change will affect the condition of water resources and growth period of crops. Countermeasures and suggestions are given.

Keywords: future climate, climate change, east part of South XinJiang

卫林等, 1995, 气候变化对我国红松林的影响, 地理研究, 14(1):17-26

本文根据红松的生长特点和环境因子对树木生长影响的作用规律, 建立能反映红松年生长量与水热因子之间关系的W-T模式, 由此分析气候变化对红松生长量与分布的影响。结论认为, 气温升高时, 红松适生范围与生长量大幅度减少。在预测气候变化范围内, 红松不会退出我国的东北部地区。

关键词: 气候变化 红松林

Wei Lin et al. 1995. The influence of climate changes on Korean pine forest in China. Geographical Research 14(1):17-26.

Based on the distribution and ecological characteristics of Korean Pine and the effects of environmental factors on tree growth, the author sets up a W-T model to analyze the influence of various climate changes on the growth and distribution and the annual growth of Korean Pine. The results show that the suitable area and the growth of Korean Pine will greatly decrease when temperature rises. In the currently predicted ranges of climate changes, the Korean Pine would not recede from northeast China.

Keywords: climate change, Korean Pine forest



李曾中, 1995, 大气环流及南极海冰变异与热带风暴生成, 气象, 21(1):19-22

本文根据1973—1981、1980—1986年格点资料及1973—1978年年际海冰资料及其它常规资料, 研究了西北太平洋地区热带风暴生成与全球大气环流及南极海冰年际变异的关系。结果表明, 在东半球地区, 南北两半球热带风暴的多寡与该地区越赤道气流的强弱相一致, 尤其与45°E处越赤道气流关系密切。同时, 也与南极海冰北界的年际变异直接有关。南极的“暖冬”、“冷夏”现象与西北太平洋地区热带风暴生成总数也相一致。

关键词: 越赤道气流 南极海冰 热带风暴

Li Zengzhong. 1995. Genesis of tropical cyclone with atmospheric circulation and variation of Antarctic sea ice. Meteorological Monthly 21(1):19-22.

Based on the data of surface wind during 1973-1981, 1980-1986, and the Antarctic sea ice data of surface wind during 1973-1978 as well as conventional data, the relationship between the genesis of the tropical cyclones over the northwestern Pacific and the interannual variation of the global atmospheric circulation as well as the northern edge of the Antarctic sea ice are studied. It concludes that, over the region of the Eastern Hemisphere, the annual frequency of the tropical cyclones of the two hemispheres is connected closely with the intensity of the cross equatorial-flow (Eastern Hemisphere), particularly with that at 45° E. At the same time, the frequency is closely linked to the interannual variation of the northern edge of the Antarctic sea ice. When there is a warmer winter and colder summer in the Antarctic, there will be a higher annual frequency of tropical cyclones over the northwestern Pacific.

Keywords: Cross-equatorial, Antarctic sea ice, tropical cyclone

林敬凡, 熊杰伟, 鲁心正, 1995,  
气候条件对烤烟质量的影响, 气象  
, 21(1):44-47

根据襄城县气候与烤烟资料, 分析了与烤烟质量相关显著的气候因子。认为降水日数是影响烤烟质量的重要气候因子。当8月降水日数<10天、4—8月降水日数<41天时, 烤烟质量较高, 反之烤烟质量下降。  
关键词: 烤烟 气候质量 气候指标

吴金栋, 太华杰, 1995, 1993年夏季低温及其对农业的影响, 气象, 21(2):19-22

本文根据农业气候学和农业气象学基本原理, 分析1993年夏季气候“凉夏”特点, 以期达到在农业生产中减灾的目的。  
关键词: 夏季低温 日照 影响

王淼等, 1995, 大气增温对长白山林木直径生长的影响, 应用生态学报, 6(2):128-132

本文将长白山林木年轮样品对照气象资料进行整理分析, 结果表明, 年均温的增长使得年轮宽度增加, 其增长加快主要和夜间增温有关; 增温还会使阔叶树比例增高。  
关键词: 年轮 全球变化  
阔叶红松林

Lin Jingfan, Xiong Jiewei, and Lu Xinzheng. 1995. Influences of climatic condition on quality of flue-cured tobacco. Meteorological Monthly 21(1):44-47.

On the basis of data on climate and flue-cured tobacco of Xiangcheng County, the paper analyzed climate factors related with quality of flue-cured tobacco. The result shows that precipitation is the most important factor that affects the quality of tobacco. The quality of the flue-cured tobacco is best when rainy days from the April to August are fewer than 41 days.

Keywords: flue-cured tobacco, climate quality, climate index



Wu Jindong and Tai Huajie. 1995. Low summer temperature of 1993 and its impacts on agriculture. Meteorological Monthly 21(2):19-22.

Using the basic principles of agroclimatology and agrometeorology, the authors analyze the climate characteristics of the cool summer in 1993 to diminish the disasters in agricultural production in recent research.

Keywords: cool summer, sunshine, impacts



Wang Miao et al. 1995. Effect of rise in air-temperature on tree ring growth of forest on Changbai Mountain. Chinese Journal of Applied Ecology 6(2):128-132.

The authors analyzed the tree-ring widths of forests of Changbai Mountain and meteorological data. The results show that the annual tree-ring width increases when the average annual air temperature increases. The accelerated growth is positively related to the temperature rise at night rather than at daytime. With the increase of the temperature, the proportion of deciduous tree species in the standing composition of the deciduous-Korean pine forest will increase.



Keywords: annual tree-ring, global change, deciduous-Korean pine forest



陈昌毓, 1995, 甘肃干旱半干旱地区降水特征及其对农业的影响, 干旱区资源与环境, 9(1):25-33

本文根据甘肃干旱半干旱地区多年降水资料分析其降水资源的特征以及这些降水特征对农业生产的利弊影响, 并提出了农业生产充分利用降水资源的途径。

关键词: 甘肃干旱半干旱区  
降水特征 农业生产 降水变率

**Chen Changyu.** 1995. Characteristics of precipitation and their effects on agricultural production in Gansu. *Journal of Arid Land Resources and Environment* 9(1):25-33.

On the basis of data on precipitation in the Gansu arid and semi-arid zone, the main characteristics of precipitation and their influences on agricultural production have been analyzed. Measures for making full use of rainfall resources to promote agriculture are suggested.

Keywords: Gansu arid and semi-arid zone, characteristics of precipitation, agricultural production, variability of precipitation



周学东等, 1995, 江苏北部沿海防护林体系的区域性气候效应, 中国农业气象, 16(1):40-43

本文利用多元统计回归方法分析江苏北部沿海防护林系的气候资料, 得出森林环境的时、空变化对区域性气候产生的影响: 防护林具有落叶期升温降湿, 生长期降温增湿的效应, 使所在区域的风速和蒸发量有全年减小的趋势。

关键词: 江苏北部沿海地区 防护林  
多元统计回归 区域性气候效应

**Zhou Xuedong et al.** 1995. The effect of protective shelterbelt system in Duffing County on regional climate. *Agricultural Meteorology* 16(1):40-43.

The authors studied the temporal and spatial effects on regional climate of protective shelterbelt system in northern coastlines of Jiangsu using the method of statistical regression. The results show that temperature increased and humidity decreased in the fall, and that temperature decreased and humidity increased in growing period of leaves. Wind velocity and evaporation also decreased conspicuously in the protective shelterbelt region.

Keywords: northern coastlines of Jiangsu, protective shelterbelt system, statistic regression, effect on regional climate

邢如楠, 巢纪平, 1995, 热带海洋对风应力异常的响应, 海洋学报, 16(2):44-50

本文针对南方涛动循环中东太平洋信风变化的特征, 研究了热带海洋对气候风应力脉动的响应。结果表明, 南方涛动高指数与拉尼娜相对应, 低指数与厄尔尼诺相对应, 南方涛动影响了全球范围内的气候变化。

关键词: 热带海洋 南方涛动  
风应力异常 模拟

Xing Runan and Chao Jiping. 1995. Effects of abnormal wind stress on tropical ocean. Acta Oceanologica Sinica. 16(2):44-50.

The effects on the tropical ocean caused by abnormal wind stress are studied on the basis of characteristics of Eastern Pacific trade wind change in Southern Oscillation (SO) circulation. It concludes that the high index of ENSO corresponds to La Niña and low index corresponds to El Niño. SO influences climate changes of the whole globe.

Keywords: tropical ocean, SO, abnormal wind stress, analogy



姚建群, 陆菊中, 1995, 两类反厄尔尼诺年对低纬大气环流及我国天气的影响, 海洋学报, 17(3):102-109

本文将1949—1987年各次反厄尔尼诺年划分为两类: 东—中类型和中—东类型。近40年中, 第一类占主要地位。作者还对不同过程类别的低纬大气环流及其气候异常进行了分析。

关键词: 反厄尔尼诺 海温  
长波辐射 大气环流

Yao Jianqun and Lu Juzhong. 1995. Effects of anti-El Niño on low-latitude atmospheric circulation and weather of China. Acta Oceanologica Sinica 17(3):102-109.

The authors analyzed characteristics of anti-El Niño between 1949-1987 and divided them into two sorts: east-middle and middle-east. The east-middle sort occupied the main position during last 40 years. Different low-latitude atmospheric circulation and abnormal climatic changes were also analyzed in the paper.

Keywords: Anti-El Niño, sea surface temperature, outgoing longwave radiation, air circulation

谢自楚等, 1995, 蒙贡—台加山的冰川及其变化特征, 冰川冻土, 17(2):113-119

蒙贡—台加山是亚洲中心部位的独立冰川作用中心, 拥有36条冰川, 总面积达27.8km<sup>2</sup>, 具有亚大陆型冰川特征, 主要接收西风环流及地方性环流造成的降水补给。小冰期最盛以来, 冰川面积已减少近半, 雪线高度也升高了。近30年来, 冰川退缩速度更快, 冰川物质平衡有10年左右的波动变化, 目前处于负平衡状态, 但有两条山谷冰川在1992—1993年突然前进。与亚洲中部其他山系相比, 本区冰川动态变化独特, 说明不同地区冰川对于全球性气候的响应过程比较复杂。

关键词: 冰川变化 物质平衡  
蒙贡—台加山

Xie Zichu et al. 1995. Glaciers and their fluctuations in Mt. Mungun-Tayga. Journal of Glaciology and Geocryology 17(2):113-119.

The Mungun-Tayga is an independent glaciated region near the center of Asia. There are 36 glaciers with an area of 27.8 km<sup>2</sup>. The glaciers have characteristics of subcontinent type of glaciers. The main supply comes from westerly and local circulations. Since the maximum of the little Ice Age, the area of glaciers has been reduced nearly by half, and the altitudes of terminal and snow line have increased. Over recent 30 years, the retreating rate of glacier has increased, there is a fluctuation of glacier mass balance with a period of about 10 years, and the glaciers are in negative balance now. However, two glaciers advanced suddenly from 1992 to 1993. It is found that the glacier change is distinctive in this region in comparison with those in other mountains in central Asia, which means that the response of glacier to global change is complicated in different regions.

Keywords: glacier change, mass balance, Mt. Mungun-Tayga



朱林楠等, 1995, 青藏高原东部的冻土退化, 冰川冻土, 17(2):120-124

本文从冻土与现代气候关系出发, 理论上确定了青藏高原东部冻土的分區界限。以丰富的资料分析了不同冻土区内诸多现象呈退化的一致性, 结论认为, 受气候变暖的影响, 退化是青藏高原东部冻土变化的基本趋势。

关键词: 青藏高原东部 冻土 退化

Zhu Linnan et al. 1995. Permafrost degeneration in the east of the Tibetan Plateau. Journal of Glaciology and Geocryology 17(2):120-124.

Based on the relationship between permafrost and modern climate, the zoning boundaries of permafrost east of the Tibetan Plateau are theoretically determined. Many phenomena in different regions have the same tendency to degeneration. It is concluded that corresponding to the warm trend of climate, the basic trend of the permafrost changing in the plateau is degeneration.

Keywords: the east of Tibetan Plateau, permafrost, degeneration

李培基, 1995, 高亚洲积雪分布, 冰川冻土, 17(4):290-298

本文根据1978—1987年SMMR微波气候积雪深度资料, 1973—1989年NOAA周积雪面积图, 以及青藏高原60个基本气象台站1957—1992年逐月积雪深度、密度和月积雪日数记录, 分析得出亚洲高原积雪时空分布特征。这对探测全球气候环境变化、诊断积雪与气候相互作用, 以及预测海面上升具有重要意义。

关键词: 高亚洲 积雪 分布 区划

Li Peiji. 1995. Distribution of snow cover over high Asia. Journal of Glaciology and Geocryology 17(4):290-298.

Based on information concerning microwave-derived Pentad snow-depth chart employing data from the Scanning Multichannel Microwave Radiometer (SMMR)(1978-1987), operational National Oceanic and Atmospheric Administration (NOAA) digitized weekly snow cover extent charts (1973-1989), and daily records of snow depth and number of snow cover days at 60 primary synoptic stations (1957-1992), seasonal and regional distribution characteristics of snow cover over high Asia are presented. The results are valuable in studying the global changes, analyzing the interaction between snow and climate, and forecasting sea level.

Keywords: high Asia, snow cover, distribution, regionalization



严中伟, 1995, 华北旱涝变化的混沌性质分析, 气象学报, 53(2):232-237

本文利用华北海河流域700多年的旱涝等级序列分析了历史旱涝变化的混沌性质。通过分析系统的局部Kolmogorov熵, 发现偏旱态和偏涝态的可预报性基本相同, 从较长时间尺度看, 干旱期的旱涝预报比湿润期要更困难些。

关键词: 历史气候 混沌 分数维 可预报性

Yan Zhongwei. 1995. Some chaotic features of the wet/dry fluctuations in North China. Acta Meteorologica Sinica. 53(2):232-237.

Based on the historical wet/dry grade series of North China for 700 years, some nonlinear features of the regional wet/dry fluctuations are analyzed. Through the local Kolmogorov-entropy analysis, the K-entropy of the smoothed series is small, but that for those drier phase points seems much smaller. It implies that, at the long time-scale, climate prediction in the drier period is more difficult than that in the wetter one.

Keywords: historical climate, chaos, fractal dimension, predictability

王谦谦等, 1995, 1991年夏季江淮洪涝成因的数值试验—西太平洋海温异常的影响, 气象学报, 53 (增刊):595-603

本文利用海温距平分布和球圈范围的初始方程模式, 研究了1991年夏季江淮流域洪涝灾害与海温距平分布的关系。结果表明, 西太平洋面积不大的海温负距平是造成当年洪涝的重要因素之一。另外, 作者对海温异常的影响机制也作了讨论。

关键词: 洪涝 海面温度异常  
数值试验

Wang Qianqian et al. 1995. Numerical experiments on the causes of the floods in the valleys of the Changjiang and Huaihe Rivers in the summer of 1991: The effects of sea surface temperature anomalies over the Western Pacific. Acta Meteorologica Sinica 53 (Supplement): 595-603.

The relationship between the sea surface temperature anomalies and the floods in the Changjiang and Huaihe valleys in the summer of 1991 is studied using data of the sea surface temperature anomalies and a numerical primitive equation model with a zonal domain. Results show that the negative sea surface temperature anomalies with a moderate large area to the west coast of the Western Pacific are the important factors of the floods in that year. Additionally, the mechanism of the effects of sea surface temperature anomalies is discussed in detail.

Keywords: floods, sea-surface temperature anomalies, numerical experiments



胡增臻, 1995, 黄河中上游7月份旱涝成因的数值模拟, 气象学报, 53 (增刊): 653-662

本文介绍了黄河中上游7月份旱涝数值模拟试验, 将对旱涝成因诊断分析的结果加入到AGCM (大气环流模式) 气候平均初始场中。模式成功地模拟出了黄河中上游的降水和大气环流的主要特征, 证实了诊断分析得出的结论, 也说明用AGCM做旱涝预报是可能的。

关键词: 黄河中上游 旱涝成因  
数值模拟

Hu Zengzhen. 1995. Numerical simulation of the cause of droughts/floods in upper-middle reaches of the Yellow River Valley in China in July. Acta Meteorologica Sinica 53 (Supplement):653-662.

The numerical simulation experiment of droughts/floods in the upper-middle reaches of the Yellow River Valley in July is presented. The analysis of formation cause of droughts/floods was put into an Atmospheric General Circulation Model (AGCM). The main characteristics of general circulation and precipitation of droughts/floods in upper-middle reaches of Yellow River were simulated perfectly by the model. The numerical simulation, for one thing, proves the results from the diagnosis analysis and points out the possibility of doing droughts/floods prediction by AGCM.

Keywords: upper-middle reaches of Yellow River, cause of droughts/floods, numerical simulation

韦志刚, 吕世华, 1995, 青藏高原积雪的分布特征及其对地面反照率的影响, 高原气象, 14(1):67-73

根据1983年7月至1990年6月青藏高原主体58个格点积雪资料, 对高原主体积雪的分布特征进行EOF分析, 认为青藏高原主体积雪分布以西部、南部为主, 中部、北部和东部积雪相对较少。且西部、南部的积雪变化与中部、北部和东部的积雪变化趋势存在反位相关关系。另外, 还对积雪对高原地面反照率的影响作了简单分析。

关键词: 青藏高原 积雪  
地面反照率

Wei Zhigang and Lu Shihua. 1995. Distribution of snow cover on the Qinghai-Xizang Plateau and its influence on surface albedo. Plateau Meteorology 14(1):67-73.

Based on a 58-grid-point data set of snow cover on the Qinghai-Xizang Plateau for July 1983 to June 1990, the distribution characteristics of snow cover on the Plateau are analyzed by using the Empirical Orthogonal Function (EOF) method. The results show that the main of snow cover on the Qinghai-Xizang Plateau is in the west and south of the Plateau. There is an opposite variation of snow cover between the western, southern parts and the middle, northern, eastern parts of the Qinghai-Xizang Plateau. The authors also discussed the surface albedo of snow cover on the Plateau.

Keywords: the Qinghai-Xizang Plateau, snow cover, surface albedo



钱永甫, 董梁, 1995, 包络地形对气候模拟特征的影响, 高原气象, 14(2):129-140

本文应用p- $\sigma$ 混合坐标系球带模式用不同包络度的地形进行数值试验, 研究了不同包络度地形对冬夏季气候模拟特征的影响。气候模拟特征有海陆和地形的共同作用决定, 地形包络度的影响是次要的。但采用较大包络度的地形可在一定程度上改善气候模拟结果, 尤其是在冬季。包络度值要取得恰当, 否则反而不利。不同地区可用不同的包络地形。

关键词: 气候数值模拟 地形包络度

Qian Yongfu and Dong Liang. 1995. The effects of envelope degrees of topography on the simulated properties of climate. Plateau Meteorology 14(2):129-140.

The authors carry out a numerical test of different envelope degrees of topography, using a primitive equation model with a zonal domain and a p- $\sigma$  incorporated vertical coordinate system to study the effects of the envelope degrees of topography on the simulated properties of climate. Findings show that the effects of the land-sea and the topographic distributions primarily determine the simulated properties of climate and that the envelope degree of the topography has a secondary effect. However, the topography with a larger envelope degree can improve the simulations to some extent, especially in winter-time and should be taken into account in order to get better simulations. Otherwise, omission could lead to problems. Different envelope degrees of topography can be adopted in different areas.

Keywords: numerical modelings of climate, envelope degrees of topography

罗勇, 1995, 青藏高原冬春季雪盖对东亚夏季大气环流影响的研究, 高原气象, 14(4):505-512

本文分析了青藏高原积雪的基本特征, 总结了高原冬季雪盖在东亚夏季气候形成与异常中的重要作用。同时还总结了高原冬春季积雪对东亚夏季大气环流影响的诊断研究和数值试验进展, 提出了高原冬春季雪盖影响气候的可能机制的概念模式。

关键词: 青藏高原 雪盖 气候影响

Luo Yong. 1995. Studies on the effect of snow cover over the Qinghai-Xizang Plateau in winter and spring on general circulation over East Asia in summer. Plateau Meteorology 14(4):505-512.

The characteristics of snow cover over the Qinghai-Xizang Plateau are analyzed and the important influences of snow cover over the Plateau in winter and spring on the climate formation and anomaly in East Asia in summer are revealed. The advances of diagnosis and numerical experiment on the effects of snow cover over the Plateau in winter and spring on general circulation in East Asia in summer are also summarized. The concept of a possibly effective analysis of snow cover over the Plateau on climate is proposed.

Keywords: the Qinghai-Xizang Plateau, snow cover, climate effect



符淙斌, 叶笃正, 1995, 全球变化和我国未来的生存环境, 大气科学, 19(1):116-126

本文在分析我国生存环境的主要特点的基础上, 研究了生存环境中自然、社会和经济活动引发的长期变化中的科学问题及其与全球变化的关系, 并提出我国全球变化研究的总体设想、主要内容和目标建议。

关键词: 全球变化 生存环境 中国

Fu Congbin and Ye Duzheng. 1995. Global change and the future trend of ecological environment evolution in China. Scientia Atmospherica Sinica 19(1):116-126.

The authors analyze the characteristics of the ecological environment in China, the major scientific issues of ecological environmental changes caused by activities of nature, society, and economy; and their relationship with global change. Some proposals for the general framework, main objectives, and research tasks of global change studies in China are offered.

Keywords: global change, ecological environment, China

刘永强, 丁一汇, 1995, ENSO 事件对我国季节降水和温度的影响, 大气科学, 19(2):200-208

本文对ENSO导致的我国不同季节降水和温度异常进行分析, 结果表明, ENSO当年我国以少雨、低温为主, 次年则相反。降水和温度异常季节变化也基本呈相反趋势。长江中下游地区显著降水异常并不发生在夏季, 而在ENSO当年春、秋季和次年春季; 东北地区最显著的低温也不在夏季, 而在ENSO当年秋季至次年春季。作者还对目前ENSO影响研究中的有关问题提出了看法。

关键词: ENSO 降水和温度异常 季节变化 合成分析

Liu Yongqiang and Ding Yihui. 1995. Reappraisal of influence of ENSO events on seasonal precipitation and temperature in China. Scientia Atmospherica Sinica 19(2):200-208.

Seasonal precipitation and temperature in China during El Niño Southern Oscillation (ENSO) events in last 40 years are analyzed. The rainfall and temperature are lower than normal in an ENSO year and almost the opposite anomalies occur in the following year. The seasonal rainfall and temperature departures evolve with almost opposite phases. The seasonal rainfall anomalies in the middle and lower reaches of the Yangtze River with certain level of statistical confidence occur in spring and autumn of the ENSO year and in spring of the following year, rather than in summer. The most significant cooling in Northeast China also appears in autumn of the ENSO year through spring of the following year, rather than in the summers. In addition, some results on ENSO influence previously obtained are reappraised on the basis of the present analysis.

Keywords: ENSO, precipitation and temperature anomaly, seasonal variation, composite analysis



贺海晏, 1995, 台风移动规律研究1—非绝热加热与水平温度分布的影响, 热带气象学报, 11(1):1-9

本文建立了一个支配台风中心移动的基本方程, 考虑了各种可能影响台风移动的强迫因子。分析表明, 非轴对称的非绝热引导作用可使台风改变速度或方向; 温度场上的冷区对台风有吸引作用。

关键词: 台风移动 局地流场引导 非绝热引导 冷区吸引作用

He Haiyan. 1995. A study on typhoon movement. 1. The effect of diabatic heating and horizontal temperature distribution. Journal of Tropical Meteorology 11(1):1-9.

A basic equation governing the movement of a typhoon has been built. The role of several forcing factors that cause the current deviation of a typhoon from the steering are considered. It is shown that diabatic steering can accelerate or slow down a typhoon or turn its direction. And the region of cold air in a temperature field may speed up a typhoon.

Keywords: typhoon movement, local steering flow, diabatic steering, attracting of cold region



周学群, 张翔, 1995, 200hPa辐散环流对台风路径的影响, 热带气象学报, 11(1):18-25

本文分析了影响海南的四类台风路径所对应的200hPa辐散风场和速度势场的特征。200hPa辐散风场对台风路径有一定的制约作用, 它决定着台风路径的中期趋势, 影响着台风未来的路径。从高层辐散风场诊断台风的移动方向有一定的可行性。

关键词: 200hPa高度 辐散环流  
台风路径 引导气流

Zhou Xuequn and Zhang Xiang. 1995. Influence of 200 hPa divergent circulation on the tracks of tropical cyclones. Journal of Tropical Meteorology 11(1):18-25.

The characteristics of 200 hPa divergent wind and velocity potential are analyzed for four kinds of tropical cyclones' tracks that have an impact on the South China Sea. It is believed that the difference of monsoon circulation in 200 hPa divergence wind field may affect the medium-range movement characteristic of tropical cyclones' tracks and the direction in the movement.

Keywords: 200 hPa height, divergent circulation, typhoon track, steering flow



冯锦全, 陈多, 1995, 我国近海热带气旋强度突变的气候特征分析, 热带气象学报, 11(1):35-42

本文对1970—1991年在我国近海发生强度突变的热带气旋进行了分类统计。平均每年有8—9个热带气旋已到我国近海时发生强度突变, 其中突然减弱的居多。突然增强只发生在5—10月, 主要出现在浙闽沿海、南海中部。珠江口外西侧到北部湾北部的粤桂南部沿海及巴士海峡东侧。突然减弱在5—12月均可发生, 海域分布较广。

关键词: 近海热带气旋 强度突变  
气候特征 峰值

Feng Jinquan and Chen Duo. 1995. Analysis of climatic characteristics accompanying sudden intensity changes in offshore tropical cyclones in China. Journal of Tropical Meteorology 11(1):35-42.

Classification statistics are presented for the tropical cyclones in offshore Chinese waters based on data from 1970 to 1991. There are 8 to 9 tropical cyclones on average per year whose intensity changes abruptly as they move toward the offshore. Most of them abruptly weaken. The more intense ones occur in May through October and are seen over waters offshore of the Zhejiang and Fujian Provinces, the central South China Sea, waters from the Pearl River mouth across the Beibuwan Bay, and the eastern Bashi Channel. The weaker ones occur during May through December and appear over a vast area.

Keywords: offshore tropical cyclones, sudden intensity changes, climatic characteristics

刘春霞, 容广坝, 1995, 台风突然加强与环境关系的气候分析, 热带气象学报, 11(1):51-56

本文用气候统计方法对1949—1992年影响我国的西太平洋台风资料进行分类并给出各类的时空分布特点及高低层平均环境场。结论认为, 影响我国的突然加强的台风主要出现在每年的7—10月份, 并集中在南海中部, 可分为三类。台风突然加强主要受低纬环流和天气系统的影响。

关键词: 台风 突然加强 环境流场统计

贺海晏, 杨平章, 1995, 台风移动规律研究2—小地形与边界层的动力作用, 热带气象学报, 11(2):97-105

本文分析了小地形(地形高度与台风系统的垂直厚度相比为小量)的抬升作用和边界层的摩擦作用对台风移动影响的定性特征。结果认为, 较高地势和边界层摩擦辐合引起的艾克曼抽吸都有利于台风发展。

关键词: 台风移动 地形强迫 艾克曼引导气流

Liu Chunxia and Rong Guangxun. 1995. The climatic analysis of the relationship between the explosive development of a typhoon and its environmental flow field. Journal of Tropical Meteorology 11(1):51-56.

Based on an analysis of the data of typhoons occurring in the western Pacific during 1949-1992, a classification is made using climatic statistics. The results show that the explosive intensification of typhoons mainly occurs in the South China Sea from July to September every year and concentrates in the middle of the South China Sea. This explosive development may be classified into 3 patterns. Their explosive mainly results from the circulation and weather systems in the low latitude.

Keywords: typhoon, explosive development, environmental flow field, statistics



He Haiyan and Yang Pingzhang. 1995. A study on typhoon movement. 2. Dynamical role of small topography and the boundary layer. Journal of Tropical Meteorology 11(2):97-105.

The dynamic effects of small topography (in the sense of the characteristic height of the topography as compared with the vertical thickness of the system of motion) and the Ekman pumping caused by the frictional convergence in the boundary layer on the motion of a typhoon are qualitatively discussed. The results show that the topographical ridge and the Ekman pumping at the top of the boundary layer can prompt the development of a typhoon.

Keywords: typhoon movement, topographical forcing, Ekman steering current

吕克利, 布和朝鲁, 1995, 大尺度凝结加热与暖锋锋生, 热带气象学报, 11(2):170-175

在假湿绝热假定下, 推导出简化的半地转湿锋生模式, 并用该模式讨论了大尺度凝结加热对暖锋锋生过程的影响。研究表明, 大尺度凝结加热对暖锋锋生过程具有明显的加强作用。

关键词: 半地转模式 大尺度加热 暖锋锋生

Lu Keli and Buhe Chaolu. 1995. Large-scale condensation heating and warm front frontogenesis. Journal of Tropical Meteorology 11(2):170-175.

A simplified semigeostrophic frontogenesis model with inclusion of large-scale condensation latent heat is built. Based on this model, the effects of latent heat release on the frontogenesis of a warm front are discussed. It is believed that because of the large-scale condensation heating, the warm front is intensified and made more characteristic of a mesoscale system.

Keywords: semigeostrophic model, large-scale heating, warm front, frontogenesis



贺海晏, 董惠菁, 1995, 台风移动规律的研究3—台风与外界水平动量交换的影响, 热带气象学报, 11(3): 193-202

本文分析了流场半非对称台风的流入层和流出层与外界的水平动量交换影响台风移动的定性特征。作者认为, 半非对称因素可以导致台风动量变化从而改变了台风的运动方向。主要流入通道或主要流出通道位于台风右(左)侧时, 有利于台风加速、左折(减速、右折); 当主要流入通道或主要流出通道位于台风后部(前部)侧时, 有利于台风加速、右折(减速、左折)。

关键词: 台风移动 水平动量交换 半非对称台风

He Haiyan and Dong Huijing. 1995. A study on typhoon movement. 3. Effect of the horizontal momentum exchange between typhoon and environment. Journal of Tropical Meteorology 11(3):193-202.

Two semi-asymmetric flow patterns of typhoons are chosen to qualitatively determine the effect of the exchange of horizontal momentum between inflow layers on the motion of typhoons. The authors believe that the asymmetric flow component could cause a net momentum input into or output from a typhoon and change typhoon movements in respect to speed and direction. A typhoon with major inflow or outflow channels on its right (left) side would tend to accelerate and turn left (decelerate and turn right). On the other hand, a typhoon with major inflow or outflow channels in the front (rear) semi-circle would tend to accelerate and turn right (decelerate and turn left).

Keywords: typhoon movement, horizontal momentum exchange, semi-asymmetric typhoon

王良健, 1995, GM (1, 1) 模型在湖南严重干旱预报上的应用, 干旱区地理, 18(1):83-86

本文利用湖南省解放以来的几次严重干旱资料, 建立了GM (1, 1) 模型。该预测模型精度为第一级

“Good”, 可以预测以后干旱年分的出现。

关键词: GM (1, 1) 模型应用  
干旱预报 湖南省

Wang Liangjian. 1995. Application of the model GM (Global Model) (1,1) to forecast the serious aridity in Hunan Province. Arid Land Geography 18(1):83-86.

The author analyzes the data of several aridity disasters in Hunan Province since the Liberation and sets up models of GM (1,1). The precision of the model is excellent. The next arid disasters can be forecasted using calculation of the gray system.

Keyword: Model GM (1,1), aridity forecast, Hunan Province



吴祥定, 刘洪滨,

潘一民, 1995, 采用条件分位数调整法合并二类气候代用资料的初步分析, 地理研究, 14(3):52-68

本文采用条件分位数调整法, 合并华山树木年轮年表和西安旱涝等级序列二类气候代用资料, 最大限度地利用了年轮资料中的连续变化信息, 并使历史文献资料相互补充, 从而使合并出来的序列更有助于对过去气候的重建。

关键词: 条件分位数 气候  
代用资料

Wu Xiangding, Liu Hongbin, and Pan Yimin. 1995. The analysis of proxy data using conditional quantile. Geographical Research 14(3):52-68.

Based on two kinds of proxy data (tree-ring-width chronology at Huashan and the wetness/dryness grade series around Xi'an), the paper combines two types of proxy climate records. With comparison and correction of the two data sets, various statistical models can be developed from individual and combined series. Among them, the best-combined model produced by the conditional quantile adjustment method can be selected for reconstruction of ancient climate.

Keywords: conditional quantile, climate, proxy data

彭乃志, 傅抱璞, 梁旭, 1995, 宁夏气温的数学模拟及多年变化特征, 地理研究, 14(3): 83-87

对宁夏气温的空间变化规律、数学模拟以及气温的多年变化特征的研究表明, 宁夏气温的地区分布呈南低北高; 用海拔高度、地理纬度、经度模拟当地气温的空间分布, 具有很高的精度; 宁夏气温多年变化普遍存在着10-12年或2.2-2.5年的变化周期。

关键词: 气温 数学模拟 功率谱  
宁夏

Peng Naizhi, Fu Baopu, and Liang Xu. 1995. The mathematical modeling and the year-to-year change of temperature in Ningxia. Geographical Research 14(3):83-87.

The result of research on the spatial and temporal changes in temperature in Ningxia shows that the temperature in the south of Ningxia is lower than that in the north. The exactitude of reckoning temperature by using height, latitude, and longitude is very good. Year-to-year changes of temperature have 10 to 12 years and 2.2 to 2.5-year cycles.

Keywords: temperature, mathematical modeling, power spectrum, Ningxia



李恺心, 姜晓艳, 1995, 多准则模糊决策方法在旱涝趋势预报中的应用, 气象, 21(2):16-18

本文应用多准则模糊决策方法, 对各种旱涝趋势预报方法作出总的评价, 进行了最佳预报方法排序, 作为最终预报的依据。

关键词: 多准则 模糊决策  
旱涝趋势 预报

Li Kaixin and Jiang Xiaoyan. 1995. The application of multi-criterion fuzzy decision to the long term forecast of dryness/wetness trends. Meteorological Monthly 21(2):16-18.

Based on the method of multi-criterion fuzzy decision analyzed, a general appraisal on methods of long-term forecasting of dryness/wetness trends is made according to forecasting accuracy. As a result, an order of optimum forecast methods as a basic principle for the final forecast is obtained.

Keywords: multi-criterion, fuzzy decision, dryness/wetness trends, forecast

陈伟民, 陈永卫等, 1995, 微机实时气象资料应用支持系统, 气象, 21(2):43-47

本文介绍了实时气象资料支持系统的特点。该系统包括资料预处理、客观分析、物理量诊断及图形显示三部分, 操作简便, 分析质量高, 省时省力且增大了预报信息量, 是进行天气预报分析的有力工具。

关键词: 微机 实时资料分析 诊断 图像显示

罗勇, 1995, 从时间序列中提取维数信息, 气象, 21(4):16-21

本文介绍了分形和分维的概念、性质和意义, 重点讨论从一维时间序列中提取维数信息的方法。另外还给出了分形与分维在天气和气候分析中的应用。

关键词: 分形与分维 ENSO系统 时间序列

Chen Weimin, Chen Yongwei, et al. 1995. The application of supporting system of real-time meteorological data to microcomputer. Meteorological Monthly 21(2):43-47.

The Real-Time Meteorological Data Application Supporting System is introduced. The system includes real-time meteorological data processing, objective analysis, and diagnosis. It is simple to operate and its analysis is accurate. As a useful tool for synoptic research, the system can increase information for operational forecasts.

Keywords: microcomputer, real-time data analysis, diagnosis/configuration display



Luo Yong. 1995. Computation of fractal dimension from time series. Meteorological Monthly 21(4):16-21.

The conceptions and characteristics of fractals and fractal dimension are introduced. The computational method fractal dimension of a dynamic system from one variable time series is mainly discussed. The utilization of fractal dimension in weather and climate analyses is given.

Keywords: fractals and fractal dimension, ENSO, time series.

顾节经, 1995, 气候变化对作物产量影响的动态统计评价模式, 气象, 21(4):50-53

本文介绍了气候变化对作物产量的动态统计评价模式, 该模式用于探索作物生育期内以旬为时间单位的气候变化对作物产量形成的影响规律, 可及时连续地进行农业生产的气候影响评价。在建模过程中引用了三项式产量预报模型、特殊影响因子诊断分析和选取最佳积分回归方程等方法, 并在使用中取得了较满意的结果。

关键词: 气候变化 作物产量  
评价模式

Gu Jiejing. 1995. A dynamic-statistical model for the assessment of the effects of climatic change on crop yield. Meteorological Monthly 21(4):50-53.

A dynamic statistical model, developed to study the effects of climate change on crop yield in the time scale of 10 days, is introduced. The model is valuable for assessing the climatic effect on agricultural activities so that sustainable development and timely responses can be made. To make the model more suitable for practical use, the following methods were used during its development: three-term crop yield forecast model, diagnostic analysis for special factors, and choice of best integral regression equation. Satisfactory results were achieved in the test model.

Keywords: climatic change, crop yield, assessmental model



郑洪初, 1995, 用CAR模型作年旱涝长期天气预报的研究, 气象, 21(7):51-53

采用特殊的CARMA模型即带受控制项的自回归模型(CAR)对年旱涝时间序列的动态系统建模。得到用三个受控制量描述的安康市的年旱涝演变规律的CAR模拟, 模型精度高。

关键词: 旱涝 长期预报 CAR模型

Zheng Hongchu. 1995. The research on annual drought and long-term flood prediction by CAR Model. Meteorological Monthly 21(7):51-53.

Using the controlled auto-regression (CAR) model, a special Consortium for Applied Research on Market Access (CARMA) model, the dynamic system of the time series of annual drought and flood in Ankang Prefecture in Shanxi Province is modeled. The CAR prediction model of three controlled variables has been obtained, and it is applied to predict annual drought/flood tendency in the Ankang region. Its accuracy is good.

Keywords: drought and flood, long-term prediction, CAR model

刘小宁, 孙安健, 1995, 年降水量序列非均一性检验方法探讨, 气象, 21(8): 3-6

以我国400余站1951—1990年降水量序列为基础, 利用比值法检验其非均一性问题。结果表明, 该方法较为有效, 我国台站迁移及雨量器的改变是引起年降水序列非均一的主要原因。

关键词: 年降水量序列 非均一性检验

李小泉, 1995, 美国长期天气预报业务的新发展—发布气候展望, 气象, 21(9):49-52

美国天气局从1995年1月开始发布预期为一年业务性气候展望, 本文对其科学依据、预报方法、预报制作与预报准确性等作出简要介绍。

关键词: 发布气候展望 科学依据 预报方法 预报制作 准确率

**Liu Xiaoning and Sun Anjian.** 1995. Research of inhomogeneity test of annual precipitation series. *Meteorological Monthly* 21(8):3-6.

Based on data of annual precipitation series from 1951 to 1990 for 400 stations in China, the inhomogeneity has been tested by using the ratio method. The results show that this method is effective to evaluate the inhomogeneity of annual precipitation series. Changes of stations and gauges are major cause of the inhomogeneity of the annual precipitation series.

Keywords: annual precipitation series, inhomogeneity, test



**Li Xiaoquan.** 1995. New development of the long range forecast operation of the National Weather Service in the United States: Issuing climate outlooks. *Meteorological Monthly* 21(9):49-52.

The author deals with the long-lead seasonal forecast, which has been issued by the National Weather Service of the United States since January 1995. The scientific basis, major methods, operational procedures for producing climate outlooks, and the forecast skill are introduced briefly.

Keywords: issuing climate outlooks, scientific basis, forecast methods, operational procedure, forecasting skill



陆文杰, 1995, 鄂尔多斯高原及周边地区地面温度的计算研究, 气象, 21(11): 11-16

本文利用NOAA-AVHRR资料, 采用一种分裂窗方法计算鄂尔多斯高原及周边地区的地面温度。与实测资料相比, 夜间计算差值在 $\pm 1^{\circ}\text{C}$ 以内的占80%, 白天占67%, 最大差值为 $-3.8^{\circ}\text{C}$ 。

该方法是一种可行的宏观地表监测手段。

关键词: 地面温度 分裂窗方法  
发射率

Lu Wenjie. 1995. The research on calculation of land surface temperature on the Ordos Plateau and the surrounding area. Meteorological Monthly 21(11):11-16.

Based on National Oceanic and Atmospheric Administration (NOAA)-advanced very high resolution radiometer (AVHRR) data, the land surface temperature of the Ordos Plateau and the surrounding area is calculated by means of a split-window method. The comparison between the computed results and the data from observations of local stations indicates that the difference is about 80% with  $1^{\circ}\text{C}$  in the nighttime, and 67% in the daytime with a maximum difference of  $-3.8^{\circ}\text{C}$ . As a macro-monitoring measure, this method is acceptable in estimating land surface temperature.

Keywords: land surface temperature, split-window method, emissivity



俞炳启, 胡洛林, 1995, 用模糊均生函数作区域夏季旱涝预测, 气象, 21(12):32-34

本文运用模糊均生函数(FMGF)建模方案建立南京、镇江地区夏季旱涝趋势预测模型, 拟合效果理想, 与实况较为接近。

关键词: 模糊均生函数 旱涝 预测

Yu Bingqi and Hu Luolin. 1995. Regional prediction of summer floods/drought with fuzzy mean generating function model. Meteorological Monthly 21(12):32-34.

The authors set up a prediction model for summer floods/droughts in the Nanjing-Zhenjiang region by fuzzy mean generating function. The model is satisfactory especially in case of severe floods/droughts.

Keywords: fuzzy mean generating function, floods/droughts, prediction

陈仲全, 张正栋, 徐国昌, 1995, 干旱指数与旱灾测防系统, 中国沙漠, 15(1):10-18

本文研究了干旱过程系统、干旱指数与旱灾测防系统问题。研究这一问题的核心是环境湿润状态和经济社会水分供需平衡的结构与动态; 减消旱灾的关键是监测、预报与工程调控系统。该项研究对减小旱灾、保护环境、发展经济社会意义重大。

关键词: 干旱指数 旱灾指数  
旱灾测防系统

吕世华, 陈玉春, 1995, 绿洲和沙漠下垫面状态对大气边界层特征影响的数值模拟, 中国沙漠, 15(2): 116-123

本文将两维高分辨率边界层数值模式与一个包括植被和土壤层的生物—大气能量传输模式(BATS)耦合, 模拟绿洲和沙漠下垫面状态对大气边界层特征的影响。绿洲对大气产生“冷湿效应”形成上空的冷湿气柱, 沙漠则对大气呈“暖干效应”形成热干气柱。绿洲上的冷湿气流在沙漠边缘形成降水, 沙漠上的暖干气流则使沙漠下游的绿洲降水与整个绿洲相比偏少。

关键词: 两维数值模式 大气边界层  
沙漠 绿洲

Chen Zhongquan, Zhang Zhengdong, and Xu Guochang. 1995. Arid index and systems for drought observation and prevention. Journal of Desert Research 15(1):10-18.

The article mainly deals with the problems of the arid index, a system of arid processes and systems for drought observation and prevention. The main subjects for the research of these systems are the environmental water status and the structure and dynamics of water supply-demand balance. The key problems for eliminating drought are observation, predication, and engineering control.

Keywords: arid index, index of drought, the systems of observation and prevention of drought



Lu Shihua and Chen Yuchun. 1995. The numerical simulation of the features of the planetary boundary layer of an Oasis and the Gobi Desert in the arid region. Journal of Desert Research 15(2):116-123.

A two-dimension high-resolution model coupling with the Biosphere-Atmosphere Transfer Scheme (BATS) was used to simulate and research the influence of the planetary boundary layer of an oasis and underlying surface on precipitation and other factors. The oases have a cold-wet effect on the atmosphere, which causes a cold-wet air column above the oasis area. And the Gobi has a hot-dry effect on the atmosphere, which causes a hot-dry air column above it. The cold-wet air brings precipitation when it passes over the desert, and the hot-dry air makes the lower reach of the oasis dryer than the average level of the oasis.

Keywords: two-dimension numerical model, the planetary boundary layer, desert, oasis

刘树华等, 1995, 植被对近地面层水热交换影响的参数化模型, 应用生态学报, 6(2):149-154

本文提出了一个研究植被和土壤特性对近地面层水热交换和能量平衡的参数化模型, 该参数化模型可应用与中尺度气象模拟、气候模拟和环境生态学的研究。

关键词: 参数化模型

土壤—植被—大气系统 能量平衡

Liu Shuhua et al. 1995. A parameterized model on moisture-heat exchange at the near-ground layer. Chinese Journal of Applied Ecology 6(2):149-154.

The authors advance a parameterized model to study the influence of vegetation and soil on the moisture-heat exchange at the near-ground layer and energy balance. The parameterized model can be used to study mesoscale meteorological modeling, climate modeling, and environmental ecology.

Keywords: parameterized model, soil-vegetation-atmosphere system, energy balance



喻本德等, 1995, 用参数方程的方法计算氟氯碳化化合物的臭氧消耗潜势, 环境科学学报, 15(2):129-134

本文根据同类氟氯碳化化合物的臭氧消耗潜势 (ODP) 之间的差异和ODP与有关参数的内在联系建立了两类求算HCFCs、CFCs的ODP的参数方程。当ODP计算值小于0.05时, 准确度较高, ODP值大于0.05时, 误差较大, 但数值本身仍有较好的参考价值。

关键词: 臭氧消耗潜势 臭氧氟氯碳化化合物 平流层化学

Yu Bende et al. 1995. Calculation of ozone depletion of halocarbons using parametric equations. Acta Scientiae Circumstantiae 15(2):129-134.

Two kinds of parametric equations are set up to calculate the ozone-depleting potential (ODP) of hydrochlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) on the basis of a study on the differences in the ODP of some kinds of halocarbons and the relationship between ODP and relevant parameters. The equations are more accurate when the ODP is lower than 0.05. When ODP is higher than 0.05, the result is also valuable.

Keywords: ozone depletion potential, ozone, halocarbons, stratospheric chemistry

杨修群等, 1995, 夏季赤道中东太平洋海温 and 北极海冰异常对大气环流影响的数值模拟, 海洋学报, 17(1): 24-31

本文对赤道中东太平洋海温偏暖、北极不同区域海冰偏多以及海温偏暖同时海冰偏多对夏季北半球大气环流的影响进行了研究, 结果表明, 海冰和赤道海温任何一方的变异均可显著影响大气环流。最后, 还证明了赤道和极地之间的热力差是决定大气环流的最基本因子。

关键词: 太平洋海温 北极海冰 热力差 数值模拟

Yang Xiuqun et al. 1995. Numeral analogy of the influence of abnormal phenomena of summer sea temperature of the equatorial eastern Pacific and sea ice of the Arctic on atmospheric circulation. Acta Oceanologica Sinica 17(1):24-31.

The sea temperature of the equatorial eastern Pacific, and sea-ice conditions in different regions of the Arctic and their effects on the summer circulation of the Northern Hemisphere are studied in the paper. The results show that each kind of abnormal change of sea ice or tropical sea temperature can affect atmospheric circulation remarkably. It is also proved that thermal difference between equator and arctic is a basic factor in determining atmosphere circulation.

Keywords: Pacific sea temperature, Arctic sea ice, thermal difference, numerical analogy



马开玉等, 1995, 厄尔尼诺循环的反馈机制探讨, 海洋学报, 17(3): 41-46

本文探讨了赤道太平洋 ( $11^{\circ}\text{S}-11^{\circ}\text{N}$ ,  $120^{\circ}\text{E}-90^{\circ}\text{W}$ ) 近40年历次厄尔尼诺和拉尼娜期间各气象因子的差异, 认为包括动力、热力和水文过程的两种正反馈和负反馈机制相互影响, 促成了厄尔尼诺循环。

关键词: 厄尔尼诺循环 反馈机制 海—气耦合

Ma Kaiyu et al. 1995. Research on the feedback mechanism of El Niño circulation. Acta Oceanologica Sinica 17(3):41-46.

The authors deal with differences of meteorologic factors of El Niño and La Niña for the last 40 years in the equatorial Pacific region  $11^{\circ}\text{S}$  to  $11^{\circ}\text{N}$  and  $120^{\circ}\text{E}$  to  $90^{\circ}\text{W}$ . The authors consider that it is the interaction of positive and negative feedback mechanisms including dynamic, thermodynamic, and hydrologic processes that formed El Niño circulation.

Keywords: El Niño circulation, feedback mechanism, air-sea interaction cycle

王宁练, 1995, 冰川平衡线变化的主导气候因子灰色关联分析, 冰川冻土, 17(1):8-15

本文应用灰色关联分析理论对乌鲁木齐河源1号冰川东、西支冰川平衡线与气候因子之间的关系进行了研究。结果表明, 夏季平均气温是影响平衡线波动的主导气候因子; 不同时期降水量对冰川平衡线波动的影响程度不同。

关键词: 灰色关联分析 平衡线  
气候因子

**Wang Ninglian.** 1995. Gray relational analysis of the leading climatic factor influencing the changes of the equilibrium line. *Journal of Glaciology and Geocryology* 17(1):8-15.

The relations between climatic factors and the equilibrium lines of the east and west branches of Glacier No. 1 in the headwaters of the Urumqi River in the Tianshan Mountains are analyzed by using of the theory of gray relational analysis. The results suggest that summer mean air temperature is the leading climatic factor that dominates the fluctuation of the equilibrium line, and that there are differences in the influences of precipitation during different periods in a balance year on the changes of the equilibrium line.

Keywords: gray relational analysis, equilibrium line, climatic factors



袁玉江, 李江风, 1995, 天山西部树轮年表的响应函数, 冰川冻土, 17(2):170-177

本文应用响应函数分析技术对新疆伊犁地区树轮年表中的气候信息作出分析并得出结论。这种方法极有助于对该区气候对森林的影响的认识和对温湿气候区树木年轮气候信息的提取。

关键词: 树木年轮表 响应函数

**Yuan Yujiang and Li Jiangfeng.** 1995. The response functions of tree-ring chronologies in the Western Tianshan Mountain. *Journal of Glaciology and Geocryology* 17(2):170-177.

The authors analyzed the climatic information from tree-ring chronologies in Ili prefecture using the analytical technique of response function. The results are useful in understanding the effect of climate on the prefectures' forest and to extracting the climatic information from the tree rings in warm and wet regions.

Keyword: tree-ring chronology, response function

林振山等, 1995, 天津局地气候的反演建模及其研究, 气象学报, 53(1):115-121

本文在对天津月平均温度 $T$ 、气压 $P$ 和雨量 $R$ 的时间序列资料分析的基础上, 反演出一组近似描写天津( $T-P-R$ )局地气候的动力方程, 同时还对其演化特性及内部相互作用机制进行了研究。

关键词: 时间序列 反演建模  
演化特性 相互作用

Lin Zhenshan et al. 1995. The retrieved model of Tianjin local climate. Acta Meteorologica Sinica 53(1):115-121.

A set of equations, which indicate the local climate of Tianjin, are retrieved based on the analysis of the data of a time series of monthly mean temperature, pressure, and rainfall in Tianjin. The evolution characteristics and the interaction of the systems are also discussed.

Keywords: time series, modeling, evolution character, interior interaction



屠伟铭, 张跃堂, 1995, 全球最优插值客观分析, 气象学报, 53(2):148-156

本文分析了国家气象中心实时运行的全球资料同化系统中的客观分析方案, 该方案采用最优插值统计方法对天气中长期预报和科研给出数值形式的全球分析值。在两年的应用中, 该方案为T42中期数值预报谱模式提供了较好的初始场资料。

关键词: 全球最优插值 统计分析  
检验

Tu Weiming and Zhang Yuetang. 1995. The global optimum interpolation objective analysis. Acta Meteorologica Sinica 53(2):148-156.

The objective analysis scheme, which is used in the Global Data Assimilation system, running in real-time at the National Meteorological Center (NMC) of SMA, is described in the paper. Through the optimum interpolating statistical method, the scheme produces the global analysis values in numerical form for long-term and medium-term weather prediction and research. In the two years of operation, a better initial condition has been developed for the spectral forecasting model, with a wave spectral function of 42, in the medium-range numerical weather prediction.

Keywords: global optimum interpolation, statistical analysis, verification

刘玉宝等, 1995, 中尺度山脉对流群的动力和微物理数值模拟, 气象学报, 53(2):157-167

本文应用中国强风暴实验室MBG (Meso-Beta -

Gamma) 非静力模式模拟了该计划中1990年5月3日一次对流降水过程。模拟结果揭示了大山脉气流强迫与对流环流相互作用的一些基本特点。此外, 作者还对采取细致的云微物理参数化和采取简单的暖云微物理参数化的方法进行对比试验。

关键词: 非静力模式 中尺度云微物理结构

Liu Yubao et al. 1995. A numerical simulation of the dynamics and microphysics of convective precipitation over a meso-scale mountain. *Acta Meteorologica Sinica* 53(2):157-167.

The May 3, 1990 precipitation processes over Asia Mountain are simulated in two dimensions by the MBG (Meso-Beta-Gamma) model of the Climate Anomaly Monitoring System (CAMS) of the People's Republic of China (PRC). The results showed the basic features of interactions between the clouds and orographic forcing. In addition, the distribution, evolution, sizes, top heights, updrafts, and precipitation growth, etc. of the modeling cumulonimbus clouds were generally consistent with field observation of the Saudi Arabian Cloud Physics Experiment (SACPEX) projects.

Keywords: non-hydrostatic model, meso-scale, precipitation, microphysical structure of cloud



刘辉等, 1995, 北半球阻塞高压的维持1: 准地转和Ertel位涡分析, 气象学报, 53(2):177-185

本文从北半球不同地区的4个阻塞高压个例, 研究了阻塞高压维持机制及其地域性差异。相对涡度输送的差异导致了300hPa位涡低值区的维持机制的地域性差异。等熵面Ertel位涡分析表明, 阻塞区域330K时间平均等熵位涡低值区的维持机制与300hPa时间平均准地转位涡低值区的维持机制十分相似, 从而表明以上等压面准地转位涡分析可以近似用来代表等熵Ertel位涡分析。

关键词: 阻塞高压 位涡 北半球

Liu Hui et al. 1995. On maintenance of blocking anticyclones of the Northern Hemisphere Part 1: Quasi-geostrophic and Ertel Potential Vorticity analysis. *Acta Meteorologica Sinica* 53(2):177-185.

The maintenance of blocking anticyclones is investigated with four observed blocking anticyclones in different regions of Northern Hemisphere. The difference of potential vorticity (PV) transform causes the regional difference in the maintenance of blocking highs in the low PV regions of 300 hPa. Very similar results are obtained with respect to maintenance of the time-mean Ertel PV in 330K surface. Therefore, in the blocking cases, the quasi-geostrophic PV analysis can be used to represent the Ertel PV analysis.

Keywords: blocking anticyclone, potential vorticity (PV), Northern Hemisphere

丁裕国, 江志红, 1995, 非均匀站网EOFs展开的失真性及其修正, 气象学报, 53(2):247-253

本文针对非均匀站网EOFs展开的失真性, 提出了一种附加面积权重的修正方案用以弥补非均匀站网EOFs展开的失真现象。中国气温场(160站)经修正后, 其气温变化主分量趋势与特征能更加客观地揭示中国地区增暖效应的局地差异。

关键词: 经验正交函数(EOFs)  
非均匀站网 面积权重

Ding Yuguo and Jiang Zhihong. 1995. The lack of fidelity of empirical orthogonal functions' (EOFs') expansion over heterogeneous network and its revised scheme. Acta Meteorologica Sinica 53(2):247-253.

A revised scheme using area weighting is developed in connection with the finding that current empirical orthogonal functions' (EOFs') expansion results are not true to some extent over a heterogeneous network. Practically, the regional differences of the recent warming effect are more objectively revealed by using the revised EOFs technique and surface temperature field records (from the network of 160 stations) in response to the trends and features of China's regions.

Keywords: empirical orthogonal functions (EOFs), heterogeneous network, area weighting



吕克利, 徐亚梅, 1995, 不同季节实际气流上斜压波的发展和锋生过程, 气象学报, 53(3):328-336

本文利用三维半地转模式研究了四季基本气流上非线性斜压扰动的发展过程和锋面形成过程。结果认为, 在四季基本气流上, 斜压扰动的发展以冬季为最强, 秋夏季最弱。扰动的发展能产生冷暖锋, 所以, 相应地形成的锋也以冬季最强, 秋夏季最弱。

关键词: 斜压波 锋生 季节变化

Lu Keli and Xu Yamei. 1995. Development of baroclinic waves on actual flows and frontogenesis. Acta Meteorologica Sinica 53(3):328-336.

The development process of nonlinear baroclinic waves and frontogenesis on the mean flows of the four seasons are studied using a three-dimensional semigeostrophic model. The results indicate that the disturbance development is the most intense in winter and is the weakest in summer and fall. They also indicate that the development of baroclinic waves on the mean zonal flows, which are functions of height and latitude, can cause cold and warm fronts. The fronts caused by baroclinic waves are strongest in winter and weakest in summer and fall correspondingly.

Keywords: baroclinic wave, frontogenesis, seasonal variation



刘辉等, 1995, 北半球阻塞高压的维持2: 瞬变扰动强迫和平均流位涡平流的形成, 气象学报, 53(3):337-348

本文探讨了大西洋阻高和东亚阻高中瞬变扰动位涡输送强迫和太平洋阻高中平均流位涡平流的形成机制。阻高西南部西风分流产生的扰动, 并不是扰动位涡输送强迫形成的必要因素。扰一流相互作用在阻高西(北)部非分流气流中十分显著, 这一相互作用可能是扰动强迫作用形成的机理。青藏高原可能是太平洋阻高中平均气流的位涡平流形成的重要因素。

关键词: 阻塞高压 位涡 北半球

Liu Hui et al. 1995. On maintenance of blocking anticyclones of the Northern Hemisphere Part 2: Mechanism of eddy forcing and potential vorticity (PV) advection by mean flow. Acta Meteorologica Sinica 53(3):337-348.

The formation of the potential vorticity (PV) transfer by eddy forcing in the Atlantic and Asia blocking cases and the advection of PV by mean flow in the Pacific blocking cases are studied. It is noted that the propagation of an eddy in diffluent flow in the southwestern blocking case is not necessary for the formation of the eddy forcing. The interaction between mean flow and eddies is also strong in the non-diffluent flow of the northwestern part of the anticyclones. The interaction may be one of the formation factors of the eddy forcing. The Qinghai-Xizang Plateau may be the formation factor of the advection of mean flow in the Pacific blocking cases.

Keywords: blocking anticyclone, potential vorticity (PV), Northern Hemisphere



陈受钧, 1995, 厄尔尼诺与东亚暖冬的数值模拟, 气象学报, 53(3): 380-384

本文根据实际观测的海面温度资料, 应用全球大气环流谱模式(ECHAM3)长期积分一个物理过程比较完善的大气环流模式模拟了厄尔尼诺年的东亚暖冬和弱冬季风现象。并对模拟的结果进行了初步讨论。

关键词: 厄尔尼诺 暖冬 数值模拟

Chen Shoujun. 1995. Numerical simulation of El Niño and East Asia warm winter. Acta Meteorologica Sinica 53(3):380-384.

On the basis of observed sea surface temperature data, the weak winter monsoon with warmer temperature over East Asia during El Niño events is simulated. A long-term integral of the European Centre for Medium-Range Forecasts (ECMWF)-Hamburg model (ECHAM3) global model on an atmosphere cycle that has a completed physical process is used. The preliminary results are discussed.

Keywords: El Niño, warm winter, numerical simulation

马开玉等, 1995, El Nino-La Nina 循环的海—气耦合机制研究, 气象学报, 53(4):461-470

本文对赤道太平洋洋面上温、压、风、湿、云以及热量收支各分量进行了综合研究。在El Nino过程中, 赤道太平洋洋面上气压梯度减小, 中、东太平洋洋面上空中水汽和云量增加, 洋面获净得的热量减少。在La Nina过程中, 情况相反。作者还概括了El Nino-La Nina 循环的两种海—气耦合反馈机制。  
关键词: EL Nino-La Nina 循环 海—气耦合 赤道太平洋

Ma Kaiyu et al. 1995. Mechanism study of El Niño-La Niña cycle in the coupled air-sea system. Acta Meteorologica Sinica 53(4):461-470.

Data of the effects of temperature, pressure, zonal wind, special humidity, clouds, and the components of the heat budget on the equatorial Pacific surface are studied. It is believed that in the processes of El Niño, the pressure gradient and trade winds decreased in the equatorial Pacific, that vapor and clouds increased, and that the net gain of heat reduced in the central and eastern equatorial Pacific surface. In the processes of La Niña the circumstances are opposite. Lastly, the authors summarize two feedback mechanisms of the El Niño-La Niña cycle.

Keywords: El Niño-La Niña cycle, air-sea coupling, equatorial Pacific



张耀存, 钱永甫, 1995, 陆地下垫面特征对区域能量平衡过程影响的数值试验, 高原气象, 14(3):325-333

本文主要进行了陆地下垫面特征变化对区域能量平衡过程影响的数值试验, 利用三维地气耦合的区域气候模式模拟了我国华北部分地区的地面能量平衡过程。结果认为, 不同的陆地下垫面性质的变化将会改变地气系统之间的能量平衡和转换过程, 进而影响到区域气候环境。通过改变地表特征的方式可改善区域气候和生态环境。  
关键词: 陆地下垫面特征 区域能量平衡 数值试验

Zhang Yaocun and Qian Yongfu. 1995. Numerical experiments of the effects of land surface characteristics on regional energy balance. Plateau Meteorology 14(3):325-333.

Numerical experiments of the effects of land surface characteristics on regulation energy balance are carried out. The surface energy budget is modeled in North China using a 3-D regional climate model. The results show that the different land surface characteristics would lead to large differences in exchanges of surface energy because they exert substantial influence on regional climate. Therefore it is possible to improve the climate condition and ecological environment on a regional scale by modifying the land surface characteristics.

Keywords: underlying surface characteristics of land, regional energy balance, numerical experiments

王宝灵等, 1995, 中国西北夏季降水的EOF分析及其与500hPa高度场的关系, 高原气象, 14(3):342-347

本文讨论了西北地区降水量的空间特征。对7-9

月月降水量分别进行EOF分解, 并与500hPa高度场进行了对比。结果发现, 7-9

月月降水量第一特征向量在青藏高原东北侧有一高值中心, 该中心与有关学者计算的新噪比高值中心和准3年周期有显著的区域一致, 7-8月月降水量第一特征向量与500hPa高度场在20-40°N, 100-130°E 和 55-70°N,

50-85°E 两区域有较好的同期相关。

关键词: EOF 中国西北地区  
降水量 青藏高原东北侧

Wang Baoling et al. 1995. Empirical orthogonal function (EOF) analysis of summer precipitation in Northwest China and the relationship between it and 500 hPa height field. Plateau Meteorology 14(3):342-347.

The spatial characteristics of precipitation in Northwest China are discussed. The characteristics of monthly precipitation from July to September in Northwest China are analyzed using EOF method. The relationship between precipitation and the 500 hPa monthly mean height is also discussed. The results show that a strong precipitation center of monthly precipitation from July to September for the first eigenvector appears on the northeast side of Qinghai-Xizang Plateau and that simultaneous relationships between first eigenvector of precipitation in July and August and 500 hPa height field in 20-40° N, 100-130° E and 55-70° N, 50-85° E are better.

Keywords: EOF, Northwest China, precipitation, the northeast side of Qinghai-Xizang Plateau



严中伟, 季劲军, 1995, 陆面过程模式中积雪过程的参数化及初步试验, 高原气象, 14(4):415-424

本文在已经发展的土壤-植被-大气模式基础上, 建立了包含雪盖问题的陆面过程模式。并用实测气象和辐射资料检验了模式对大气降雨和降雪的反应。结果表明, 该模式描写的各种物理过程合理, 一些可观测要素的演变特征与实况相当一致。

关键词: 陆面过程模式  
雪盖变化参数化 HEIFE

Yan Zhongwei and Ji Jinjun. 1995. Preliminary experiments of a land-surface process model with simple parameterization of snow cover. Plateau Meteorology 14(4):415-424.

A new version of the land-surface process model in which the snow-cover process is considered is developed on the base of the existing soil-vegetation-atmosphere model. A few experiments were designed using meteorological and the surface radiation data. The results show that the modeled processes forced by atmospheric precipitation (both rainfall and snowfall) are quite reasonable. Some modeling elements, such as the surface soil temperature and the surface net radiation, coincide well with the observations.

Keywords: land-surface process model, parameterization of snow-cover variation, Heihe River Field Experiment (HEIFE)

吴池胜, 王安宇, 1995, 青藏高原隆起对亚洲夏季风形成作用的数值试验, 高原气象, 14(4): 425-432

本文利用有限区域五层原始方程模式进行了青藏高原隆起过程对亚洲夏季风形成作用的数值试验。试验分为1000m、2000m、3000m、3500m和4000m 5组。

结果表明, 高原及其东南侧的热源随着高原的隆起而加强, 迅速加强的热源将引起季风环流产生相应的明显变化; 当高原隆起达3500m时, 南亚高压出现, 热带东风明显加强, 同时地面低压中心迅速西移上高原; 当高原隆起高于3500m后, 亚洲季风更为强大; 高原隆起导致了周边地区降水变化。

关键词: 夏季风 青藏高原隆起

Wu Chisheng and Wang Anyu. 1995. Numerical experiments for the effects of the rising of the Tibetan Plateau on the formation of Asian summer monsoon. Plateau Meteorology 14(4):425-432.

Numerical experiments were performed using a five-layer primitive equation model that is limited in certain areas. The experiments were composed of five parts: heights of 1000 m, 2000 m, 3000 m, 3500 m and 4000 m. The results show that the atmospheric heat source over the Tibetan Plateau and its southeast neighborhood strengthened with the rising of the plateau. The Asian summer monsoon circulation was changed obviously. When the mean height of the plateau is raised to 3500 m, the South Asian high in the upper troposphere appear, and the tropical easterly to the south of the high center strengthens considerably. Meanwhile, the low-level thermal low over the Asian continent moves westward over the plateau rapidly. When the plateau rises higher than 3500 m, the monsoon strengthens considerably. The rising of the plateau also causes variation of precipitation in regions around it.

Keywords: summer monsoon, the rising of the Tibetan Plateau



杨大升, 曹文忠, 1995, 中高纬大气30—60天低频振荡的一种动力学机制, 大气科学, 19(2):209-218

本文研究了中高纬低频振荡产生的动力机制。正压局地不稳定性能较好地解释中高纬大气30—60天振荡, 低频振荡是大尺度大气运动和扰动相互作用的一种固有特征。本文还讨论了适于激发季节内低频振荡的基本流场。初值问题的研究发现中高纬大气30—60天振荡呈纬向三波模态发展, 与初始扰动和基本气流的冬、夏差别无关。

关键词: 动力机制 大气季节内振荡 热带外纬度

Yang Dasheng and Cao Wenzhong. 1995. A possible dynamic mechanism of the atmospheric 30-60 day period oscillation in the extratropical latitude. Scientia Atmospherica Sinica 19(2):209-218.

The dynamic mechanism producing the intraseasonal variability in the extratropical latitude is studied. Study indicates that the barotropic local instability rather satisfactorily accounts for the atmospheric 30-60-day periodic oscillation at the middle and high latitudes. The low-frequency oscillation is an intrinsic characteristic of the large-scale atmospheric motion's interaction with the perturbation. Moreover, the basic currents accommodations to the triggering of the intraseasonal oscillation are discussed. The investigation of the initial value

problem reveals that the atmospheric 30-60-day periodic oscillation develops in a stable fashion on the zonal 3-wave mode and is independent of the initial disturbance as well as of the discrepancy of the basic currents between winter and summer.

Keywords: dynamic mechanism, atmospheric intraseasonal oscillation, extratropical latitude



章基嘉, 徐祥德等, 1995, 青藏高原地面热力异常对夏季江淮流域持续暴雨形成作用的数值试验, 大气科学, 19(3):270-276

本文采用OSU-AGCM大气环流模式, 讨论了青藏高原下垫面热力异常与夏季江淮流域暴雨形成的关系。结果表明, 1991年夏季江淮流域持续性降水是由青藏高原下垫面热力异常导致的。青藏高原热力异常还可以引起大范围云量异常区类似于二维Rossby波列沿大圆路径传播的特征。

关键词: 青藏高原 热力异常  
江淮暴雨 数值试验 云量异常分布

Zhang Jijia and Xu Xiangde. 1995. A numerical experiment of the effect of anomalous thermal forcing of the Tibetan Plateau ground surface on the formation of persistent heavy rain in summer over the Yangtze-Huaihe basin. Scientia Atmospherica Sinica 19(3):270-276.

The relationship between the anomalous thermal forcing of the Tibetan Plateau ground surface and the formation of heavy rain in the Yangtze-Huaihe basin is discussed by using the Oregon State University atmospheric general circulation model (OSU-AGCM). The anomalous thermal regime of the Tibetan Plateau's ground surface caused persistent rainfall in the Yangtze-Huaihe basin during the summer of 1991. Similar to the character of the two-dimension of Rossby waves along the great circle route, the anomalous thermal forcing of the Tibetan Plateau can result in the distribution of anomalous cloud amount.

Keywords: Tibetan Plateau, anomalous thermal forcing, heavy rain in Jianghuai basin, numerical experiment, distribution of anomalous cloud amount

李志锦, 纪立人, 1995, 正压大气有利发展扰动型与遥相关型的建立, 大气科学, 19(3):277-288

本文讨论了夏季纬向不对称气候平均气流下通过正压大气内部动力过程建立遥相关型的问题, 介绍了有利发展扰动型的概念。分析表明, 最有利发展的扰动型的振幅增长率同实际大气遥相关型的增长率相一致。并且这些有利发展扰动型都将演变为同实际大气相一致的遥相关型结构。至少部分实际大气遥相关型是只依赖与大气内部的正压过程即能量转换过程而建立起来。

关键词: 正压大气 遥相关型 有利发展扰动 奇异值和矢量

Li Zhijin and Ji Liren. 1995. Preferred perturbations of growth in the barotropic atmosphere and the dynamics of teleconnection. *Scientia Atmospherica Sinica* 19(3):277-288.

The problem whether the generation of teleconnection patterns can result solely from the internal barotropic processes of the zonally varying climatological flow in the northern summer is discussed. The conception of preferred perturbation of growth is introduced. The results of calculations show that the amplification rate of the leading preferred perturbations of growth is consistent with that of realistic teleconnection patterns. It is suggested that the formation of at least some teleconnection patterns can depend on the preferred perturbations of growth.

Keywords: barotropic atmosphere, teleconnection pattern, preferred perturbation of growth, singular value and vector



赵鸣等, 1995, 一个引入近地层的土壤-植被-大气相互作用模式, 大气科学, 19(4):405-414

本文建立了一个土壤-植被-大气近地层的相互作用模式。结果证明, 本模式能合理模拟土壤、植被、大气的温、湿以及各种通量的变化。进一步与中尺度大气模式耦合可以用于气候研究。

关键词: 土壤层 植被层 近地层 相互作用模式

Zhao Ming et al. 1995. An interactive model of the soil-vegetation-atmosphere including surface layer. *Scientia Atmospherica Sinica* 19(4):405-414.

An interactive model of the soil-vegetation-atmospheric surface layer has been built. It is shown that the model can obtain a reasonable simulation of the variations of temperature, moisture and different fluxes in the soil, vegetation, and atmosphere. It can be used in simulating climate in a mesoscale model.

Keywords: soil layer, vegetation layer, surface layer, interactive model

谢炯光, 1995, 扩展经验正交函数 (EEOF) 及其在月、季降水预测中的应用, 大气科学, 19(4):481-486

本文提出一种降水长期预测的新方案, 用扩展经验正交函数 (EEOF) 方法展开降水场, 寻找前期降水场与后期降水场分布趋势的关系, 对未来降水场分布趋势和降水总量趋势作出预测。

关键词: 扩展经验正交函数  
月 (季) 降水 隔季相关

**Xie Jiongguang.** 1995. Extended empirical orthogonal function (EEOF) and applications to monthly (seasonal) rainfall prediction. *Scientia Atmospherica Sinica* 19(4):481-486.

A new scheme for long-range forecasting has been proposed. The monthly (seasonal) rainfall distribution field is expanded by EEOF to find the relationship between the earlier rainfall distribution field and later rainfall distribution and prediction of rainfall tendency.

Keywords: extended empirical orthogonal function, monthly (seasonal) rainfall, relation of ever-successive seasons



穆穆, 1995, 大气运动非线性不稳定性研究的若干新进展, 大气科学, 19 (4) : 494-509

本文应用并发展了Arnold方法 (能量-Casimir方法), 在非线性不稳定性方面研究大气运动取得了若干新进展。作者讨论了该领域理论深入发展的前景及其应用问题。

关键词: 不稳定性 非线性

**Mu Mu.** 1995. Some advances in the study of the nonlinear instability of atmospheric motions. *Scientia Atmospherica Sinica* 19(4):494-509.

Arnold's method (energy-Casimir method) is used and developed by the author. The nonlinear instability of atmospheric motions are studied and some recent advances are obtained. The prospects of the further development of the theory and its applications are also discussed.

Keywords: instability, nonlinearity

杨芳林, 袁重光, 1995, 夏季赤道东太平洋海温异常对全球及东亚短期气候变化影响的数值试验, 大气科学, 19(5):535-544

本文应用两层大气环流模式研究了夏季赤道东太平洋地区负的海温异常对全球及赤道东太平洋地区和东亚局地短期气候变化的影响, 并对赤道东太平洋海温异常影响全球及赤道太平洋和东亚局地短期气候变化的物理机制进行了探讨。

关键词: 海表温度异常 降水异常 短期气候变化

Yang Fanglin and Yuan Chongguang. 1995. Numerical experiment on the influence of sea-surface temperature anomalies in the eastern equatorial Pacific in summer upon the short-range climate changes across the globe and in East Asia. Scientia Atmospherica Sinica 19(5):535-544.

The influence of negative sea-surface temperature anomalies (SSTA) in the eastern equatorial Pacific in summer on global atmospheric circulation and regional short-range climate changes in the equatorial Pacific and East Asia is studied using the two-level atmospheric circulation model. The physical mechanism of regional short-range climatic changes that are affected by SSAT in the eastern equatorial Pacific in summer is also studied.

Keywords: sea-surface temperature anomalies, anomalous precipitation, short-range climate change



钱维宏等, 1995, 地球自转年际变化作用于全球海温异常的观测事实和数值试验, 大气科学, 19(6):654-662

本文根据12年144个月全球各大洋的海温距平资料进行了分析, 结果认为, 赤道东太平洋海温的异常仅仅是全球变化的一个部分。地球自转首先引起纬向风的异常, 然后作用于洋流和海温的异常。全球各大洋海温时空分布实况的变化特征可由一个简化的海洋浅水波模式模拟出来。

关键词: 地球自转 海温异常 数值试验

Qian Weihong et al. 1995. The observational study and numerical experiment on the effect of the variation of the Earth's rotation on the globe. Scientia Atmospherica Sinica 19(6):654-662.

Based on the global sea surface temperature anomalies (SSTA) of 144 months in 12 years, it is found that the East Pacific SSTA is just one part of the global temperature changes. The variation of the Earth's rotation rate causes the anomaly of zonal wind and then the abnormal stress force of zonal wind will cause the anomaly of the current and the SSTA. All of these can be simulated by coupled ocean models.

Keywords: Earth's rotation, sea surface temperature anomaly, numerical experiment



张勤等, 1995, 热带太平洋地区SST A和风应力场的海气耦合模态, 热带气象学报, 11(1):43-50

本文使用EOF分析了20年热带太平洋地区风应力场资料和SSTA资料, 对它们的空间分布特征模态和时间变化特征进行研究, 确定了海洋和大气之间的耦合关系及其与ENSO之间的关系, 揭示了大气和海洋相互作用的本质。

关键词: 风应力 海温 海气耦合 相互作用

Zhang Qing et al. 1995. The air-sea coupling modes of the sea surface temperature anomaly and wind stress over the tropical Pacific. Journal of Tropical Meteorology 11(1):43-50.

Twenty years of wind stress and sea surface temperature anomaly (SSTA) data for the tropical Pacific are studied by the empirical orthogonal function (EOF) method to reveal the characteristic modes of spatial distribution and features of temporal variation. The modes of air-sea coupling and its relationship with El Niño Southern Oscillation (ENSO) are found and the essence of the interaction between air and sea is summarized.

Keywords: wind stress, sea temperature, air-sea coupling, interaction



江志红, 丁裕国, 1995, 我国下半年降水距平与北太平洋海温异常的奇异值分解法分析, 热带气象学报, 11(2):133-141

本文利用奇异值分解法分析了我国下半年各月降水距平与北太平洋月平均SSTA的相互关系。作者认为, 秋冬季海温影响了我国春末至盛夏的降水量; 秋冬季赤道东太平洋海温对次年4-5月江南东部和7月高原东侧、黄河中下游地区的降水有显著的影响; 前一年6月黄淮地区及7月长江流域降水影响了次年盛夏至冬季的赤道中东太平洋海温。

关键词: 奇异值分解法  
下半年降水距平 北太平洋海温

Jiang Zhihong and Ding Yuguo. 1995. The singular value decomposition analysis between the sea surface temperature anomaly (SSTA) field over the northern Pacific and the precipitation anomaly field during the summer half year in China. Journal of Tropical Meteorology 11(2):133-141.

The relationship between sea surface temperature anomaly (SSTA) field over the northern Pacific and precipitation anomaly during the summer half year in China is studied using the singular-value decomposition method. The authors believe that the SSTA fields in autumn and winter affect rainfall for each month from the end of spring to midsummer in China. The SSTA field in the equatorial eastern Pacific during autumn and winter has a strong influence on the rainfall in the following July for the eastern Plateau and the middle-and-lower reaches of the Yellow River. The rainfall for the Yellow River Valley and the Huaihe River Valley in the preceding June or the Yangtze River Valley in July can affect the SSTA field in the middle and eastern equatorial Pacific from the prime of summer to winter.

Keywords: decomposition of singular value, precipitation anomaly during summer half year, sea surface temperature in northern Pacific

王兴宝, 张维桓, 1995, 地形激发斜压波动的数值研究, 热带气象学报, 11(2):150-161

本文应用准地转和半地转二维模式研究了南北向长的山脊对过山斜压气流强迫产生扰动的过程, 还把准地转模式和半地转模式的结果作了对比, 并讨论了上述结果在实际天气过程中的意义。

关键词: 地形 斜压波动 激发

Wang Xingbao and Zhang Weihuan. 1995. A numerical study of baroclinic disturbance excited by a mountain ridge. Journal of Tropical Meteorology 11(2):150-161.

Processes of disturbance generation forced by baroclinic current overflowing a north-south mountain ridge are studied using two-dimensional quasi-geostrophic and semi-geostrophic models. The authors also discuss the comparison between the two models and the implications of the results achieved in real atmospheric processes.

Keywords: topography, baroclinic wave, excitation



吕克利, 1995, 大气中的位涡守恒和Rossby波的能量、波作用与拟能守恒, 热带气象学报, 11(2):258-268

本文推导得到普遍形式的位涡度守恒方程。对准地转位涡方程, 利用WKB近似, 得到了空间换变基本气流和层结可变情况下的Rossby波的能量、波作用与拟能守恒条件。还给出了地形存在情况下的Rossby波的能量、波作用与拟能守恒条件。

关键词: 缓变基流 地形 守恒律

Lu Keli. 1995. Conservation conditions of potential vorticity and wave energy, action and entropy for Rossby waves. Journal of Tropical Meteorology 11(2):258-268.

A general conservation law of potential vorticity is obtained by calculation. Use of the Wentzel-Kramers-Brillouin (WKB) approximation in a slowly varying basic flow and a variable stratification parameter derives the conservation laws of wave energy, action and entropy for Rossby waves. Finally, the effect of topography is mainly on the slope with an west-east direction and causes only the variation of wave action.

Keywords: slow-varying basic flow, topograph, law of conservation

阎敬华, 薛纪善, 1995, 中尺度模式中 $p$ -面与 $\sigma$ -面扩散差异的数值分析, 热带气象学报, 11(4):354-364

本文对常用的四阶线性水平扩散的A、B两种方案进行了量纲分析和简化, 并用有地形中尺度模式对两种方案作了详细的对比数值试验和分析。试验结果表明, 在地形平缓区域, 两种方案的预报差异较小, 而在陡峭地形附近, 则预报差异很大, 这是因为方案A中出现了温度和湿度的虚假扩散, 造成温度和湿度异常, 进而引起不稳定层和对流发展的异常。方案A还造成环流场异常, 导致周围地区的降水异常。方案B可以解决陡峭地形附近的预报异常问题, 用方案B解决该问题是必要的和可行的。

关键词: 两种水平扩散方案  
中尺度模式 量纲分析 对比试验

Yan Jinghua and Xue Jishan. 1995. Numerical analysis of the difference between pressure-surface and sigma-surface diffusion. Journal of Tropical Meteorology 11(4):354-364.

Dimensional analysis and reduction are made to the two commonly used schemes (A and B) of 4<sup>th</sup>-order linear horizontal diffusion. In addition, detailed control experiments between the two schemes are made using a topography-included mesoscale model. Experiments show that differences are small in smooth-terrain areas and very large in steep mountain areas. The reason for that finding is that temperature and humidity are falsely diffused in Scheme A, which causes abnormal temperature and humidity and results in the abnormalities of unstable layer and convective development. In addition, Scheme A causes circulation anomalies, which cause rainfall prediction deviations in the area. Analysis indicates that Scheme B, which can minimize the diffusion scheme involved in forecasting abnormalities in steep mountain and adjacent areas, is necessary and feasible.

Keywords: two horizontal schemes, dimensional analysis, mesoscale model, control experiments



严绍瑾, 彭永清, 1995, 给定参数条件下海温脉动随机模式的混沌行为, 热带气象学报, 11(4):365-369

本文根据Saltzman海气随机气候模式就建立了海温脉动 $\theta'$ 的Langevin方程以及对应的Fokker-Planck方程。在给定参数条件下, 概率密度曲线 $p(x, t)$ 具有多个极大值, 并在 $p(x, t) - p(x, t+\tau)$ 相空间中呈现Cantor集合图象, 表明该随机系统在上述参数条件下出现了混沌行为。

关键词: 随机系统 Cantor集合  
混沌行为

Yan Shaojin and Peng Yongqing. 1995. Chaos output from a sea surface temperature (SST) fluctuation stochastic model with given parameters. Journal of Tropical Meteorology 11(4):365-369.

Using the Saltzman sea-air stochastic climate model, the Langevin equation for sea-air fluctuation  $\theta'$ , and the related Fokker-Planck equation were derived. The probability density curve  $p(x, t)$  is of a number of maximum, and a Cantor set image is shown in the phase space of  $p(x, t)$  and  $p(x, t+\tau)$  in terms of specified parameters, indicating that the stochastic system produces chaos output with the defined parameters.

Keywords: stochastic system, Cantor set, chaos output

## Radiation and Trace-Gas Emission

赵凤生, 石广玉, 1995, 温室气体诱导的渐变气候效应, 地理学报, 50(5):430-438

本文用能量平衡模式 (EBM) 和改进的箱式扩散 (BD\*) 海洋模式的耦合模式 (EBM/BD\*) 研究大气中温室气体浓度增加引起的全球地表气温变化。并对下世纪大气中CO<sub>2</sub>浓度变化及其诱导的全球地表气温变化进行了分析。

关键词: 温室效应 渐变气候效应 海洋模式

Zhao Fengsheng and Shi Guangyu. 1995. A study on the transient and time-dependent greenhouse gas-induced climate change. Acta Geographica Sinica 50(5):430-438.

The article documents the development of a coupled energy balance model and a box diffusion model (EBM/BD) to study the greenhouse-gas-induced transient and time-dependent change on global mean temperature. The variations of the ground surface temperature of the next century are estimated using the coupled model.

Keywords: greenhouse effect, time-dependent climate change, ocean model



查良松, 1995, 西北地区太阳辐射量变化的研究, 干旱地理, 18(1):8-13

本文对西北地区30年来到达地面的太阳辐射量观测资料进行分析, 得出太阳散射辐射量在西北地区的变化规律。认为太阳总辐射量自1978年以来基本上普遍减少。文章用太阳辐射量倾向率的形式概括出三种太阳辐射量季节变化类型。

关键词: 方差分析 太阳辐射量 季节性变化类型

Zha Liangsong. 1995. Research on the variation of solar radiation in northwest China. Arid Land Geography 18(1):8-13.

The variation of solar radiation in northwest China during the last 30 years is analyzed. The paper concludes with the regulation of the diffuse solar radiation in northwest China and the global solar radiation decreases in almost the whole area since 1978. In this research, three typical types of seasonal variation of solar radiation are obtained.

Keywords: variance analysis, solar radiation, seasonal variation type

段争虎, 刘新民, 屈建军, 1995, 中国土地沙漠化对大气CO<sub>2</sub>含量的影响, 干旱区地理, 18(4):46-52

本文以我国不同地区沙漠化类型的面积、土壤有机碳的含量及沙漠化的正逆转速率为基础, 研究了我国沙漠化土地中有机碳的变动。结论认为, 近40年来, 我国沙漠化土地净释放到大气中的CO<sub>2</sub>量占全球温带和寒带土地每年净释放量的93.5%。  
关键词: 中国 土地沙漠化 CO<sub>2</sub>含量

Duan Zhenghu, Liu Xinmin, and Qu Jianjun. 1995. Effect of land desertification on the carbon dioxide content of the atmosphere in China. *Arid Land Geography* 18(4):46-52.

The change in the organic carbon content of the desertified land is studied based on the area of desertified land, the organic carbon content in soil, and the rate of desertification, development, or adverse processes in China. The amount of carbon dioxide released to atmosphere is more than that assimilated from atmosphere. The net carbon dioxide released to atmosphere in China occupies 93.5% of the whole quantity of the temperate zone and the frigid zone in the last 40 years.

Keywords: China, land desertification, carbon dioxide content



曾治权等, 1995, 北京地区冠心病和脑卒中发病与太阳、地磁活动关系的探讨, 地理研究, 14(3):88-96

本文通过对1984—1991年北京地区自然人群中冠心病和脑卒中急性发作的发病率与某些太阳、地磁活动因子的关系的统计和单相关分析说明这两类病症与太阳、地磁活动因子存在一定的相关性。为进一步用太阳地球物理流行病学方法研究心血管病病因和变化规律提供了依据。

关键词: 冠心病 脑卒中 太阳活动 地磁活动 回归分析 重叠时序法

Zeng Zhiquan et al. 1995. Research on the relationship between coronary heart disease, stroke, and solar and geomagnetic activity. *Geographical Research* 14(3):88-96.

The paper deals with association between the acute onset of coronary heart disease and stroke and factors of solar and geomagnetic activities. The analysis was done by statistical and simple correlation for a period of 8 years from 1984-1991. The result shows that there was certain correlation between the acute onset of coronary heart disease and stroke and some factors of solar and geomagnetic activities.

Keywords: coronary heart disease, stroke, solar activity, geomagnetic activity, correlation analysis, analysis of overlapping epoch

白建辉, 王庚辰, 1995, 太阳辐射各因子的变化对太阳紫外辐射的影响, 气象, 21(9):3-6

本文根据1990年北京太阳分光辐射的观测资料计算影响太阳紫外辐射的臭气、水汽、气溶胶等因子的变化所引起的太阳紫外辐射的变化。当各因子分别减少5%时, 到达地面的太阳紫外辐射将分别增加0.84%, 0.27%, 和1.90%。在分析太阳紫外辐射的变化趋势时, 应全面考虑各个因子的影响。

关键词: 太阳紫外辐射 臭气 水汽 气溶胶

Bai Jianhui and Wang Gengchen. 1995. Effects of the change in factors affecting solar radiation on solar ultraviolet radiation. Meteorological Monthly 21(9):3-6.

The change of the solar ultraviolet radiation caused by changes in ozone, water vapor, and aerosol are calculated based on the observation of solar spectral radiation in 1990 over the Beijing area. The solar ultraviolet radiation will increase 0.84%, 0.27%, and 1.90% respectively as ozone, water vapor, and aerosol decrease 5%. The influence of all the factors affecting solar ultraviolet radiation should be considered comprehensively in analyzing the variation trends of solar ultraviolet radiation.

Keywords: solar ultraviolet radiation, ozone, water vapor, aerosol



白淑菊等, 1995, 长白山常绿针叶树越冬期间光合能力的抑制, 应用生态学报, 6(2): 138-142

本文探讨了长白山区红松及其它针叶树在冬季也存在光合抑制以及遮荫可减轻抑制的问题。推测在长白山地区或冬季气候与之相似的地区, 常绿针叶树在冬季均可能表现光合抑制, 释放CO<sub>2</sub>。

关键词: 针叶树 遮荫 光合能力 光合抑制 光氧化

Bai Shuju et al. 1995. Winter inhibition in photosynthetic ability of Changbai Mountain evergreen conifers. Chinese Journal of Applied Ecology 6(2):138-142.

There exists winter inhibition in photosynthetic ability of conifers. Shading can ameliorate the photosynthetic ability. It is suggested that all the evergreen conifers on Changbai Mountain and similar mountain regions suffer from photosynthesis inhibition and photooxidation stress during winter, and a large quantity of CO<sub>2</sub> is released as a result.

Keywords: conifer, shading, photosynthetic ability, photosynthesis inhibition, photooxidation

陈冠雄等, 1995, 稻田 $\text{CH}_4$ 和 $\text{N}_2\text{O}$ 的排放及养萍和施肥的影响, 应用生态学报, 6(4): 378-382

本文用箱法研究了我国东北稻田 $\text{CH}_4$ 和 $\text{N}_2\text{O}$ 的排放情况, 东北稻田的 $\text{CH}_4$ 排放通量小于南方稻田, 在淹水期稻田基本上不排放 $\text{N}_2\text{O}$ , 非淹水期则释放大量的 $\text{N}_2\text{O}$ 。稻田施肥和养萍明显促进 $\text{CH}_4$ 和 $\text{N}_2\text{O}$ 排放。稻田 $\text{CH}_4$ 和 $\text{N}_2\text{O}$ 排放之间存在消长关系。

关键词: 稻田  $\text{CH}_4$ 和 $\text{N}_2\text{O}$ 排放  
养萍 施肥

Chen Guanxiong et al. 1995.  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emission from a rice field and effect of azolla and fertilization on them. Chinese Journal of Applied Ecology 6(4):378-382.

By using chamber technique, the authors studied the characteristics of  $\text{CH}_4$  (methane) and  $\text{N}_2\text{O}$  (nitrous oxide) emission from a rice field in northeastern China.  $\text{CH}_4$  emission from a rice field in northeastern China is less than that in southern China. Rice fields emit almost no  $\text{N}_2\text{O}$  during the flooding period, but substantially emit it during the non-flooding period.  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emissions are greatly enhanced by azolla and fertilization. There is a trade-off relationship between  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emissions.

Keywords: rice field,  $\text{CH}_4$  and  $\text{N}_2\text{O}$  emission, azolla, fertilization



于克伟等, 1995, 几种旱地农作物在农田 $\text{N}_2\text{O}$ 释放中的作用及环境因素的影响, 应用生态学报, 6(4): 387-391

本文根据几种旱田 $\text{N}_2\text{O}$ 的排放通量的观测结果, 研究了植物在农田 $\text{N}_2\text{O}$ 释放中的作用及环境因子对 $\text{N}_2\text{O}$ 通量的影响。结果表明, 大豆田 $\text{N}_2\text{O}$ 通量每天有两个释放高峰, 而菠菜田和春小麦田每天只有一个释放高峰, 裸地的 $\text{N}_2\text{O}$ 释放很少。光照变化对植物 $\text{N}_2\text{O}$ 通量影响很大, 光弱时的 $\text{N}_2\text{O}$ 释放通量较高。

关键词: 农田 作物  $\text{N}_2\text{O}$ 通量  
 $\text{N}_2\text{O}$ 的汇 光照

Yu Kewei et al. 1995. Role of several upland crops in nitrous oxide emissions from farmlands and its response to environmental factors. Chinese Journal of Applied Ecology 6(4):387-391.

Based on data of observation of emissions of nitrous oxide from farmlands of upland crops, the role of upland crops in nitrous oxide emissions and the effect of environmental factors on nitrous oxide emissions are studied in this paper. The results show that there exist two emissions of diurnal nitrous oxide flux from soybean fields, but only one peak from spinach and spring wheat fields. Bare fields are a weak nitrous source. The variation of illumination has a significant influence on nitrous flux from crops. Higher emissions of nitrous oxide from crops occur under weak illumination.

Keywords: farmland, crop, nitrous flux, nitrous sink, illumination

陈万隆, 1995, 农作物对紫外辐射的反射与吸收, 中国农业气象, 16(2):9-12

本文研究了4种农作物对紫外辐射的反射与吸收, 结果表明, 农作物对紫外辐射的反射要比对太阳总辐射的反射率小得多, 其吸收率随叶面指数增大而增大。作物对紫外辐射反射的日变化与太阳总辐射反射率的日变化一致。

关键词: 紫外辐射 反射 吸收

Chen Wanlong. 1995. Reflection and absorption for ultraviolet radiation (UV) of crops. *Agricultural Meteorology* 16(2):9-12.

The author investigates the reflection and absorption for ultraviolet radiation (UV) of four kinds of crops. The results indicate that the reflection of UV radiation on crops is much less than that of total solar radiation. The absorption rate increases with the increase of the index of leaf area. In addition, the daily variation in reflection of UV radiation coincides with the rate of solar radiation.

Keywords: UV, reflection, absorption



盛业华等, 1995, 工矿城市地面热场的遥感调查及其对大气污染的影响, 环境科学, 16(3):19-22

本文根据城市冬季清晨和中午两个时相的图像信息以及地面同步辐射温度数据, 通过数字图像处理, 得出城市地面热强度。研究发现, 城市的热岛效应在清晨表现明显。作者还建立了低空气温和下垫面辐射温度之间的线性关系, 并由此研究了地面热场对大气污染的不良影响。

关键词: 红外遥感 地面热场 大气污染

Sheng Yehua et al. 1995. Remote sensing survey and effects on atmospheric pollution of ground heat field in mining city. *Environmental Sciences*. 16(3):19-22.

Ground heat intensity of a city is obtained through digital imagery with data of image information of morning and noon and ground synchronous radiant temperature. The result indicates that the heat effect of a city is more distinctive in the morning. The authors set up a linear relationship between low-altitude temperature and radiant temperature and studies the negative effects on the atmosphere of ground heat field.

Keywords: infrared remote sensing, ground heat field, atmospheric pollution



王可丽, 钟强, 1995, 青藏高原地区大气顶净辐射与地表净辐射的关系, 气象学报, 53(1):101-107

根据1972年8月—1983年7月青藏高原地区地面辐射收支观测资料及同期NOAA—7辐射收支资料, 用回归分析的方法研究了大气顶净辐射与地表净辐射之间的关系, 并在此基础上分析了青藏高原地区月平均地表净辐射的时空分布特征。

关键词: 青藏高原 大气顶净辐射 地表净辐射

Wang Keli and Zhong Qiang. 1995. The relationship between the planetary and surface net radiation over Qinghai-Xizang Plateau. Acta Meteorologica Sinica 53(1):101-107.

Based on analysis of data of the simultaneous surface radiation and the National Oceanic and Atmospheric Administration satellite NOAA-7 radiation budget over Qinghai-Xizang Plateau during the period from August 1982 to July 1983, the relationships between surface net radiation flux and net radiation flux at the top of the atmosphere (TOA) are discussed through regression analysis. On the basis of this analysis, the spatial distributions of the monthly mean surface net flux are analyzed.

Keywords: Qinghai-Xizang Plateau, net radiation flux at the top of the atmosphere, surface net radiation flux



王尧奇, 韦志刚, 1995, 河西地区的太阳直接辐射和大气透明度, 气象学报, 53(3):375-379

本文根据河西地区民勤和敦煌两个日射站1981—1983年的资料, 计算了太阳直接辐射在传输过程中的各种衰减。作者认为, 该地区的环境具有干燥、荒漠和狭管地形的特点, 这种特点使气溶胶衰减, 影响直接辐射。

关键词: 太阳直接辐射 大气透明度 云的辐射衰减 河西地区

Wang Yaoqi and Wei Zhigang. 1995. The direct solar radiation and the atmospheric transparency over the Hexi region. Acta Meteorologica Sinica 53(3):375-379.

Based on the analysis of data from 1981 to 1983 of the two solar radiation stations in Minqin and Dunhuang of the Hexi region, various kinds of attenuation of the direct solar radiation during the transmission process are calculated. The authors believe that aridity, desert, and narrow channel topography are characteristic of the Hexi region and their influence on direct solar radiation appears as an attenuation of aerosols.

Keywords: direct solar radiation, atmospheric transparency, attenuation of solar radiation of cloud, Hexi region

白建辉, 王庚辰, 1995, 大气中的水汽对太阳紫外辐射消光的可能机制分析, 大气科学, 19(3):380-384

本文通过对北京地区晴天和实际天气条件下到达地面太阳紫外总辐射的计算, 分析了影响到达地面太阳紫外总辐射的各主要因子的主次贡献。重点讨论了大气中的水汽, 对到达地面的太阳紫外总辐射消光的可能机制。

关键词: 水汽 太阳紫外辐射  
光化学反应

Bai Jianhui and Wang Gengchen. 1995. A possible extinction mechanism of solar ultraviolet radiation by water vapor in the atmosphere. Scientia Atmospherica Sinica 19(3):380-384.

Based on the calculation of the ultraviolet radiation reaching the ground over the Beijing area, the primary and secondary contributions of dominant factors affecting the solar ultraviolet radiation reaching the ground surface under clear sky conditions and actual sky conditions are analyzed. The possible extinction mechanism by water vapor of the solar ultraviolet radiation reaching the Earth's surface, which operates in most atmospheric photochemical reactions, is emphasized.

Keywords: water vapor, solar ultraviolet radiation, photochemical reaction



王可丽, 钟强, 1995, 辐射传输模式中地表参数对大气长波辐射的影响, 大气科学, 19(5):606-614

本文分析了下垫面温度与地表温度两者不能合二为一的问题, 利用

Liou-

Ou一维宽带辐射传输模式, 对地表热力参数取值部分作了改进。同时, 还讨论了下垫面温度的日变化对大气长波辐射通量日变化的影响及地表比辐射率的变化对大气长波辐射通量计算结果的修正作用。

关键词: 辐射传输模式  
大气长波辐射 地表热力参数

Wang Keli and Zhong Qiang. 1995. Effect of surface thermal parameters on atmospheric long-wave radiative fluxes in a radiative transfer model. Scientia Atmospherica Sinica 19(5):606-614.

The lack of an observed relationship between underlying surface temperature and surface air temperature is analyzed. The surface thermal parameters are improved by using the Liou-Ou one-dimensional atmosphere radiative transfer model. In addition, both the effect of the underlying surface temperature on the diurnal cycle of atmospheric long-wave radiative fluxes and the effect of the modulating of surface emissivity on the atmospheric long-wave radiative fluxes are discussed.

Keywords: radiative transfer model, atmospheric long-wave radiation, surface thermal parameters

王卫国等, 1995, 热带东太平洋海温与北半球大气臭氧层的遥相关结构, 热带气象学报, 11(2):115-122

本文统计分析了1月份、7月份热带东太平洋海温与北半球大气臭氧层之间的季节性相互联系以及海温导致的臭氧层遥相关的空间结构。结果发现, 热带东太平洋海温对北半球臭氧层的分布及其季节演变都具有重要作用。不同季节海温导致的臭氧层的遥相关型也相同; 不同季节海温对臭氧层的影响效果产生叠加, 使臭氧层对海温的响应表现出十分明显的波列结构。

关键词: 臭氧层 海温 遥相关型  
基点相关图

Wang Weiguo et al. 1995. Teleconnection between sea surface temperature (SST) in the tropical eastern Pacific and the ozonosphere over the Northern Hemisphere. Journal of Tropical Meteorology 11(2):115-122.

Seasonal interaction between sea surface temperature (SST) in the tropical eastern Pacific and the ozone layer in Northern Hemisphere and the teleconnection spatial structure caused by SST effects, for January and July, are statistically analyzed. The result indicates that SST in the tropical eastern Pacific is important to the northern ozone layer distribution and its seasonal evolution. The difference in the teleconnection pattern for the ozone layer is the result of the effects of SST in different seasons. And the persistent influence of SST on the ozone layer causes well-defined wave chains in the layer responding to SST.

Keywords: ozonosphere, sea-surface temperature, teleconnection pattern, one-point correlation map